An Empirical Study of the Role of CRM Critical Success Factors in the Successful Implementation of CRM

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Abstract :

Conceptually, customer relationship management (CRM) has been widely embraced by businesses. In practice, however, examples of success contrast with anecdotes where the diffusion of CRM into organizations continues to be a slow process and/or where CRM implementation outcomes have fallen short of expectations. Successful implementation of CRM initiatives depends on a number of factors such as information quality, system quality, service quality, top management support, and technological readiness were empirically tested. Moreover, major indicators (measures) of successful implementation of CRM initiatives such as increasing customer retention rate, increasing customer acquisition rate, deepening relationship with customers, and improving customer satisfaction are also empirically tested. Building on the results of a survey of the CRM-implementation-related experiences of 18 Jordan-based banks with 154 self-administered questionnaire participants in this study, the authors identify factors associated with successful CRM implementation and identify indicators of successful or effective implementation and highlight the implications of the study findings for future research.

Keywords: Information Systems, Customer relationship management, Critical success factors, Successful (effective) implementation of CRM.

Introduction:

Nowadays, customers are no longer simply looking for the best price, they expect high level of service and care from operators. Customers are in charge because they make the rules; if organizations are to survive, they must do business in any way the customer wants. Moreover, banks need to

continuously create new value propositions for customers in order to survive in an increasingly dynamic market (Kalkota & Robinson 2001). As a result, customer relationships have become a company's most valued asset. However, with the globalization of the economy, the banking sector is facing additional challenges such as keeping up with technological progress, burgeoning competition and growing customer volatility. Hence, the banking sector, with its attentive approach to the needs of banking operators, designed several systems to increase customer satisfaction and retention, and make the customers feel important. One of the most important systems in the banking sector is the CRM technology system, because CRM aids in serving better the customers whom are considered to be the backbone and the most important asset in the organization.

When introduced over 10 years ago, customer relationship management systems (CRM) were touted as the answer for expanding relationships and building loyalty and customer-centric strategy, this led many banks to invest heavily in CRM. In their efforts to increase efficiencies and reduce costs, leading banks have encouraged this shift with self-service kiosks inside the branch and expanding the functionality of ATMs. Now those banks have improved efficiencies at the branch level, they must look to the bigger question of how to generate more revenue and build market share in the market (Skea, 2005). An effective or successful implementation of the CRM system can contribute to the organization in terms of improved sales, market share profitability, customer satisfaction and reduced customer turnover, service cost and time (Rajnish *et al.,* 2003). However, there are important issues in achieving CRM success such as strategic, organizational and technological issues (Kennedy et al., 2006).

Even though, technology, business processes and top management support are critical to CRM implementation, successful firms view technology as a tool to help build profitable customer relationships while recognizing that individual employees are the building blocks (Kennedy *et al.,* 2006). Based on a comprehensive and intensive literature review, the critical success factors required for the effective implementation of the CRM system considered in this study are information quality, system quality, service quality, top management support, and technological readiness.

Beyond the growing costs of marketing and customer acquisition, banks lose customers because of poor service, the real loss comes from the fact that banks generate customer profitability increases as the relationship matures, of course some of their loses are natural attrition due to death,

moves, or other life occurrences of customers, but most of these customers leave because of dissatisfaction (Skea, 2005).

Today's CRM systems often rely on employees to identify opportunities and initiate actions based on self-defined reports, which has kept the focus on sales and marketing instead of on day-to-day operations. Linking transactions to CRM and, as a result, launching processes can help banks connect the dots for branch employees. Moreover, real-time business analysis and response to customer realities motivate employees to offer more appropriate service and build the customer's relationship with the branch and the bank, since they focuse human and financial resources on maximizing existing customer relationships and of ceaseless investments in mailing and marketing to recruit new customers. Derek Redman, Bank-Director's Technology Manager states that, "customer relationship management is absolutely the key to our business. We have to know our customers, understand their behaviors, and respond to their needs" (www.onyx.com). The major indicators or measures of successful implementation of the CRM initiatives in this study are improving customer satisfaction, deepening relationship with customers, increasing customer acquisition rate, and increasing customer retention rate as it has been shown in the research model Figure (3).

The Research Problem:

It would be difficult to be technology specialist in CRM systems without having good communication skills and good appreciation for the value of customer interaction and the relationships. Therefore, identifying and understanding the varieties of factors that influence the CRM system success are of a paramount importance; in this research, the researchers will identify the most common critical success factors required to build and implement an effective CRM system. Moreover, the researchers will identify the measures of the effective CRM system. Therefore, the problem of this study encompassed the following three questions:

1. What are the Critical Success Factors (CSFs) that determine the effectiveness of CRM system?
2. How can banks build and implement an effective CRM system?
3. How can banks measure the effective CRM system implementation?

Study Significance:

Disappointedly, despite its increasing acknowledged importance, little research has focused on the proper implementation of the CRM concept. Scattered research efforts have been observed in the realm of maintaining a deep customer focus (e.g., Vandermerwe, 2004), reengineering the

organizational structure (e.g., Ryals & Knox, 2001), and managing knowledge by leveraging the use of information technology (e.g., Stefanou *et al.,* 2003). There is no theoretical, integrative framework to delineate how the CRM concept can be properly translated into a comprehensive set of concrete organizational activities (in this research CSF) conductive to CRM success. Furthermore, very little has been done in terms of creating a valid measurement scale & testing the concept empirically. To this end, it is the purpose of this study to propose a conceptualization of the CSF & the successful (effective) implementation indicators, as well as to develop a reliable & valid measurement scale for both of them.

Study Objectives

- Identify and Explain the relationship among the main aspects of the CRM system;
- Identify and Explain the main components of the CRM system;
- Identify the critical success factors (CSFs) required to implement an effective CRM ; and
- Identify the measures of the effective CRM system.

Definitions of customer relationship management (CRM) system & the CRM system aspects:

A difficulty with CRM is that it is a highly fragmented environment and has come to mean different things to different people. One view of CRM is the utilization of customer related information or knowledge to deliver relevant products or services to customers (Levine, 2000). Another view of CRM is that it is technological oriented. Sandoe *et al.* (2001) argue that advances in database technologies such as data warehousing and data mining, are crucial to functionality and effectiveness of CRM systems. According to Laudon & Laudon (2004), CRM system is an information system for creating a coherent integrated view of all of the relationships a firm maintains with its customer. Furthermore, Peppard (2000) suggests that technological advances in global networks, convergence and improved interactivity, are key to explaining the growth of e-business and CRM. CRM technologies are best seen enablers of the people and processes needed to effectively and efficiently manage customers, with CRM seeking to provide a strategic bridge between IT and marketing strategies aimed at building long-term relationships and profitability (Kennedy et al., 2006). However, Fayerman, (2003), define CRM as an enterprise wide business strategy designed to optimize revenue and customer satisfaction by organizing the institution around customer segments. In addition, Gray & Byun (2001) consider CRM as primarily a strategic business and process issue rather than

a technical issue. In conjunction with this line of thinking, Kalkota & Robinson 2001, define CRM as an integrated sales, marketing, and market strategy that precludes lone showmanship and that depends on coordinated enterprise-wide actions. Therefore, the researchers consider the CRM system as an integration framework and a business strategy, not a product.

According to (Gray & Byun, 2001), CRM system consists of the following three aspects presented in Figure 2 below:

- *Customer*. The customer is the only source of the company's present profit and future growth. However, a good customer, who provides more profit with less resource, is always scarce because customers are knowledgeable and the competition is fierce. Sometimes it is difficult to distinguish who is the real customer because the buying decision is frequently a collaborative activity among participants of the decision-making process, information technologies can provide the abilities to distinguish and manage customers. CRM can be thought of as a marketing approach that is based on customer information.
- *Relationship*. The relationship between a company and its customers involves continuous bi-directional communication and interaction; the relationship can be short-term or long-term, continuous or discrete, and repeating or one-time. Relationship can be attitudinal or behavioral. Even though customers have a positive attitude towards the company and its products, their buying behavior is highly situational. For example, the buying pattern for airline tickets depends on whether a person buys the ticket for their family vacation or a business trip. CRM involves managing this relationship so it is profitable and mutually beneficial. Customer lifetime value (CLV), is a tool for measuring this relationship.
- *Management*. CRM is not an activity only within a marketing department. Rather it involves continuous corporate change in culture and processes. The customer information collected is transformed into corporate knowledge that leads to activities that take advantage of the information and of market opportunities. CRM required a comprehensive change in the organization and people.

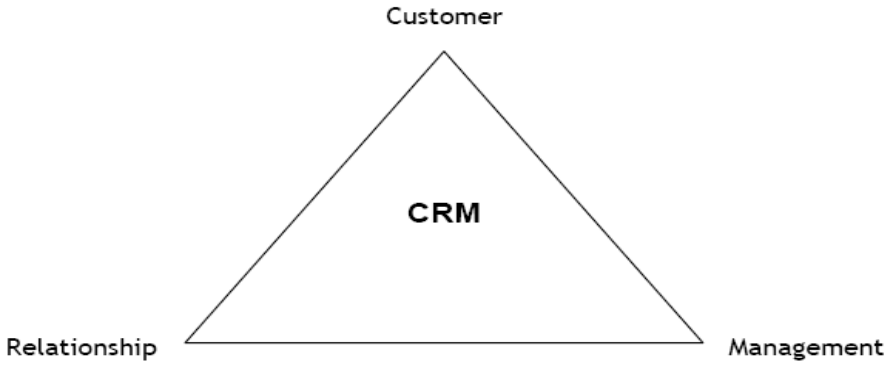

Figure (1) : CRM System Aspects

Goals of the CRM System:

The goals of the CRM business framework include (Kalkota & Robinson 2001, p. 173):

- *Using existing relationships to grow revenue*. This means preparing a comprehensive view of the customer to maximize his or her relationship with the company through up-selling and cross-selling and, at the same time, enhancing profitability by identifying, attracting, and attaining the best customers.
- *Using integrated information for excellent service*. By using customer's information to better serve his or her needs, you save the customer time and ease any frustration. For example, customers should not have to repeat information to various departments again and again. Customers should be surprised by how well you know them.
- *Introducing consistent, replicable, channel process and procedures*. With the proliferation of customer contact channels, many more employees are involved in sales transactions. Regardless of size or complexity, companies must improve process and procedural consistency in account management and selling.

CRM System Architecture:

The architecture of CRM system classified into three main components operational CRM, analytical CRM, and collaborative CRM these components are included in Figure (2) below.

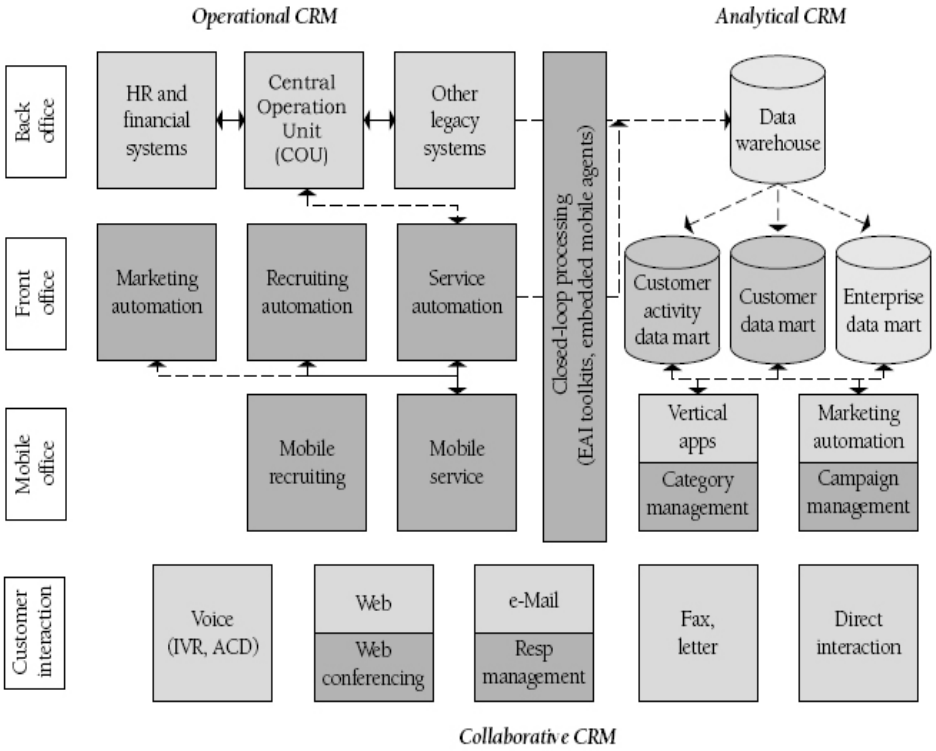

Figure (2): CRM System Architecture Source: (Fayerman, 2003)

Operational CRM:

Operational CRM involves the automation of horizontally integrated business processes involving:

1. ***Front-office customer touch points*** including marketing automation, recruiting automation, and customer service automation.
   - Marketing Automation
   - Recruiting Automation
   - Customer Service Automation:
2. *Back-office applications* such as human resources and financial systems, central operation unit (COU), and other legacy systems.
   - Human Resources (HR) System
   - Financial System
   - Central Operation Unit (COU
   - Legacy system:

Analytical CRM:

The analytical component is usually created around a data warehouse that feeds various analytical applications and data marts. The following will be a brief explanation of data warehousing:

- Data warehousing
- Collaborative CRM
- E-mail
- Interactive voice response system (IVR
- Web conferencing
- Web portal

Literature Review:

Croteau & Li (2003) aim to identify the CSFs of Canadian CRM initiatives; the researchers designed a questionnaire and distributed it to the executive managers in multiple organizations in Canada, data obtained from mail survey provided merely a snapshot of organizations interested in CRM technological initiative across Canada, and used a random sample of respondents to reduce variability and bias errors. External validity has been minimized with the use of sample comprising organization from multiple vertical sectors of industry.

The study delivers valuable insight into the CSFs of Canadian CRM initiatives, results indicate that CRM technological initiatives are successful when adequate top management support and accurate knowledge management capabilities, supported by suitable information technology infrastructure measured by technological readiness.

Kim (2004) proposes a process model as a recipe for successful IS development. Adopting a process theory approach permits examining the sequence of and interplay between specific factors involved in the process. Two case studies one success, one failure illustrate how these factors influence CRM system development and, ultimately, determine whether a project succeeds or fails.

Some researchers argue that the process by which information systems are developed is poorly understood especially the social factors involved. The proposed process model elucidates the technology and social factors associated with CRM development, and how they influence each other and then lead to the consequences of IS development. The model aids in the empirical detection of repeating patterns of social activity in IS development.

Bohling *et al.* (2006) identify the factors that influence success implementation of CRM such as fit between a firm's CRM strategy and programs and its broader marketing strategy, and intra-organizational and inter-organizational cooperation and coordination among entities involved in implementation, building on the results of a survey of the CRM implementation related experiences of 101 U.S. based firms.

As a result linking CRM strategy and implementation more tightly with the overall marketing strategy of a business will lead to greater CRM implementation effectiveness.

The work of Wilkin & Castleman (2002) has led to the development of a multi-item instrument for measuring the quality of delivered IS. The merit of this approach is the ease and simplicity with which insight into the quality of a delivered system is acquired. Unlike previous instruments that have captured quality or surrogates for quality in one statement, this instrument captures quality using multiple statements per dimension, thereby providing greater insight into problematic areas. The virtue of this approach is the quality-based framework that QUALIT is built on comprising components, dimensions and indicators. However, until the reliability (coefficient alpha and Cronbach's alpha) and validity (corrected item-to-total correlation, coefficient alpha and judgment panel) tests are undertaken, QUALIT's accuracy in assessing the quality of a delivered information system is not confirmed. Furthermore, development has only focused on formulating an instrument to measure the quality of a delivered system: it does not take account of the effects of the system development approach or economic factors, nor the problem of miss-investing in IT.

This study proposes a research model that helps in identifying the critical success factors of CRM technological initiatives. Moreover, the research model helps in identifying the major indicators of successful (effective) implementation of CRM initiatives. The constructs of this study constitute an extended version of Croteau & Li (2003) and Bohling *et al.,* (2006). The research constructs are composed of the CSF: information quality; system quality; service quality; top management and; technological readiness. The research constructs also include major indicators of successful (effective) implementation of the CRM initiatives: improving customers satisfaction; deepening relationship with customers; increasing customer acquisition rate and; increasing customer retention rate.

Information Quality:

Data and Information Quality is commonly thought of as a multi-dimensional concept (Klein, 2001) with varying attributed characteristics depending on an author's philosophical view-point. Most commonly, the term "Data Quality" is described as data that is "Fit-for-use" (Wang & Strong, 1996), which implies that it is relative, as data considered appropriate for one use may not possess sufficient attributes for another use (Tayi & Ballou, 1998).

Information quality is taken to mean a global judgment of the degree to which these stakeholders are provided with information of excellent quality, with regard to their defined needs excluding user manuals and help screens (features of system quality) (Wilkin & Castleman, 2002).

Information quality is evaluated in terms of accuracy, timeliness, completeness, relevance, and consistency (Messner, 2007).

In this study, the construct information quality consists of the following variables: accuracy, content, format, and timeliness (availability of information).

Table (1)
Dimensions of the Information Quality Construct

Dimensions	Brief Description	Supporting References
Accuracy	The accuracy of information on the CRM system	(Katerattanakul, 2002) (Madu & Madu, 2002)
Content	The relevance and completeness of information on the CRM system	(Katerattanakul, 2002) (McKinney *et al*, 2002)
Format	The way the information is presented on the CRM system	(Waite & Harrison,2002) (Madu & Madu, 2002)
Timeliness	The availability of information in the appropriate time	(Katerattanakul, 2002) (Madu & Madu, 2002)

Accuracy: Information accuracy is information free from mistakes or errors and has the value that the end user expects (Amer *et al.,* 2005).

Content: information content is defined as the communicated material that appears on an information system. Information content can include a range of material, such as details related to the service offering, order status or tracking, corporate policies, or public relations (Weiss *et al.,* 2003).

Format: this refers to the medium for the presentation, the ordering in which data are presented to the user, and the amount and kinds of graphics that are used (Sauter, 1997).
The format of information is subordinate to its content; so the "format" of the providing body should also be subordinate to the content, its preservation, and its mission (Soules, 2006).

Timeliness: timeliness address whether the information is available to the user soon enough for it to be meaningful. There is some delay until the data in the system have been updated. Furthermore, there is a delay between when the data have been updated and when they are available to the user (Sauter, 1997).

System Quality:
System quality is the user's object-based belief of the system, such as reliability, flexibility, integration, accessibility and timeliness (Chen & Kersten, 2006).

System quality is a measure of the information processing system itself, and focuses on the outcome of the interaction between the user and the system (Cheung & Lee, 2003).

System Quality is taken to mean a global judgment of the degree to which the technical components (including hardware, software, help screens and user manuals) of delivered IS provide the quality of information and service as required by stakeholders (Wilkin & Castleman, 2002).

System quality is calculated based on ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance (Messner, 2007).

In this study, the construct system quality consists of the following variables: effective system design, ease of use, security and features and options.

Table (2)
Dimensions of the system Quality Construct

Dimensions	Brief Description	Supporting References
Effective System Design	The CRM system have good user interfaces	(kim, 2004) Interviews with employees in banking sector
Ease of Use	The extents to which the CRM system is easy to use and helps users accomplish their tasks.	(Zeithaml *et al* 2002) (Janda *et al*, 2002)
Security	The CRM system's ability in protecting customer's personal information from unauthorized use or disclosure.	(Cheung & Lee, 2003) (Madu & Madu, 2002) Interviews with employees in banking sector
Features and options	The number of options and features that provided by CRM system	Interviews with employees in banking sector

Effective System Design: the variable effective system design mainly means good user interface. According to Sauter (1997), user interface includes all the mechanisms by which commands, requests, and data are entered into the CRM system, as well as all the methods by which results and information are output by the system, the key to good user interface design is to present information in such a way that users can avail themselves of the full potential of the system. Today, this is more an art than science.

Ease of Use: refers to the property of a system that a user can operate without having to overcome a steep learning curve. System with high ease of use will be intuitive to the average user in the target market for the system. The term is often used as a goal during the design of a system (www.wikipedia.org).

Security: According to www.nbrm.gov.mk (2005) information system security encompasses the following:

1. Confidentiality: information is available only to persons who are vested with authorized access. The bank has to establish processes, procedures and controls for the protection of the information from unauthorized access.

2. Integrity: it is the protection of accuracy, the comprehensiveness of information, and the processing methods. The bank has to establish processes, procedures and controls to be used for the prevention of altering the information in an unauthorized manner, and unauthorized system management could weaken the information accuracy, comprehensiveness, and reliability.

3. Availability: the authorized users have access to the information and to the other accompanying devices necessary for its presentation, if needed for the business. The bank has to establish processes, procedures and controls to be used to enable the authorized users to have access to the information and to the systems when there is a business need.

Service Quality:

Service quality is taken to mean a global judgment or attitude relating to an assessment of the level of superiority or excellence of service, provided by the IS department and support personnel (Wilkin & Castleman, 2002).

Service quality describes the overall support delivered by application management and can be evaluated along the three dimensions; assurance, empathy, and responsiveness (Messner, 2007).

In this study, the construct service quality consists of the following variables: reliability, responsiveness, and empathy (www.wikipedia.org).

Table (3)
Dimensions of the service Quality Construct

Dimensions	Brief Description	Supporting References
Reliability	The promised service in a reliable and dependable manner	(Gefen, 2002) Interviews with employees in banking sector
Responsiveness	The willingness to help and prompt service availability of help screens	(Gefen, 2002) Interviews with employees in banking sector
Empathy	The care and individualized attention	(Gefen, 2002) Interviews with employees in banking sector

Reliability: In general, reliability is the ability of a system to perform and maintain its functions in routine circumstances, as well as hostile or

unexpected circumstances. The IEEE defines it as "the ability of a system or component to perform its required functions under stated conditions for a specified period of time."

Responsiveness: is a principle from interaction design / HCI, saying that a system's response to user input should happen with no perceivable delay. Responsiveness is considered a vital requirement for any user interface, and the lack of it will usually result in frustration. Other operations that take longer time should be kept in the background, giving highest priority to the user-relevant operations, such as typing, or onscreen buttons. If letting the user wait is inevitable, the system must at least show a progress bar to indicate it's busy, or something to make sure the user's command has been received and understood.

Empathy: is commonly defined as one's ability to recognize, perceive and directly experientially feel the emotion of another. As the states of mind, beliefs, and desires of others are intertwined with their emotions, one with empathy for another may often be able to more effectively define another's modes of thought and mood. Empathy is often characterized as the ability to "put oneself into another's shoes", or experiencing the outlook or emotions of another being within oneself, a sort of emotional resonance. System empathy means that the system should interact with user; this field is called system thinking and is related with expert systems and artificial intelligence.

Top Management Support:

Top management support of information systems refers to the degree to which top management understands the importance of the IS function and the extent to which it is involved in IS activities. Top management support refers to the extent to which information technology implementation efforts are promoted by the top management organization (Rai & Bajwa, 1997). Management comprises the senior leadership of an organization, which includes the CEO, CIO, COO, and other senior-level business executives (Armstrong & Samburamurthy, 1999).

In this study, users' training is considered as a variable of top management support construct.

User training: the focus of user training is on teaching all employees who will use the new CRM system in their daily work about the system’s functions. The ideal system’s functions consists of information about customers, pre-defined rules for a more efficient workflow management and automated processes, among other things (Buljan, 2005).

Technological Readiness:

According to Croteau & Li, (2003), technological readiness refers to the level of sophistication of IT usage and IT management in an organization. Since CRM necessitates a high level of integration between all contact points, support and service, and marketing functions, and solid IT infrastructure, it is posited that IT-sophisticated organizations would have the necessary technological resources to support CRM initiatives.

In this study, the construct technological readiness consists of the following variables: Knowledge management capabilities, system integration, and good information technology infrastructure.

Table (4)
Dimensions of the technological readiness construct

Dimensions	Brief Description	Supporting References
Knowledge management capabilities	The ability of the CRM system to capture, manage, deliver real time information	(Croteau & Li, 2003) Interviews with employees in the banking sector
System integration	channel integration, and the integration between the new system and the legacy systems	(Kim, 2004) Interviews with employees in the banking sector
Good information technology infrastructure	There is a good database available and no lack in communication resources	Interviews with employees in the banking sector

Knowledge management capabilities: is the ability of an organization to capture, manage, and deliver real time authenticated customer and services information in order to improve customer response and provide faster decision making based on reliable information (Croteau & Li, 2003).

System integration: is the bringing together of the components (sub-systems) into one system and ensuring that the sub-systems function together as a system. A system is an aggregation of subsystems cooperating so that the system is able to deliver the over-arching functionality. System integration involves integrating existing (often disparate) subsystems. The subsystems will have interfaces. Integration involves joining the subsystems together by "gluing" their interfaces together. System integration is about determining the required "glue". System integration is also about value-

adding to the system, capabilities that are possible because of interactions between subsystems.

Good IT infrastructure: IT infrastructure is defined as the network and the server equipments used in sensitive areas such as data centers, communication rooms, customer networks, lab areas etc... (CERT-In, 2007). According to Kärrberg & Liebenau (2005), typically a good IT infrastructure which consists of email, Internet, and common databases decreases the coordination costs.

Major Indicators of Successful Implementation of CRM:

Improving Customers' Satisfaction:

User satisfaction is defined as one aim in developing usable interactive systems. The concept of satisfaction - in contrast to other objectives – refers to the subjective perspective of the user. Measures of satisfaction are defined to assess the user's perception of aspects such as efficiency, helpfulness, learn-ability, or attitudes to the use of the system (Mahlke, 2005).

User satisfaction is generally regarded as one of the most important measures of Information Systems success (Xiao & Dasgupta, 2002). In line with this Department of the Air Force Air University (2002) point out that user satisfaction has been widely accepted as a surrogate measure for system success.

User satisfaction is defined as the "extent to which users believe the information system available to them meets their information requirements" (Ives and et al. 1983:785). As such, user satisfaction is a subjective measure of system success. Therefore, in this study, user satisfaction was measured subjectively by asking the users what their satisfaction level is?

Deepening Relationship with Customers:

Customer relationship is defined as a continuing relationship between a bank and a consumer to provide a financial product or service to the consumer. This would include a deposit, credit, or investment account (Comptroller of the currency administrator of national banks, 2001).

Increasing Customer Acquisition Rate:

Customer acquisition is the process of gaining new customers. This acquisition can be achieved via marketing campaigns, via referrals from existing customers, etc… Customer acquisition literally means getting new customers. However, the term customer acquisition used to represent any activities necessary for getting and retaining customers. In addition to

getting new customers, it includes identifying customer needs, pricing, branding, and customer retention (Kawashima, 2002).

Increasing Customer Retention Rate:

The customer retention rate is the rate at which customers are kept and is expressed as the percentage of customers at the beginning of the year that still remain at the end of the year (Ibhar, 2004). A customer retention rate is the percentage of customers who have met a specified number of repurchases over a finite period of time (Ryerson, 1997).

Research Model:

The research model, as shown in Figure (3), is a representation that illustrate the following three research questions: First, what are the critical success factors that best support CRM system initiatives?, Second, how can banks build and implement an effective CRM system? & Finally, what are the major indicators of the successful (effective) implementation of the CRM initiatives? The successful (effective) implementation of CRM initiatives is the dependent variable, illustrated as a second-order factor composed of improving customers satisfaction; deepening relationship with customers; increasing customer acquisition rate and; increasing customer retention rate. Whilst, information quality; system quality; service quality; top management support and; technological readiness constitute the independent variable. The theoretical background of this research model combines fundamental constructs taken from Croteau & Li (2003) and Bohling *et al.,* (2006), then edited by the researchers of this study.

Research Hypotheses:

The proposed research model presented in Figure (3) is tested empirically with five main hypotheses in order to answer the research questions.

First hypothesis:

H1: There is a significant relationship between Information quality and the CRM success.

Second hypothesis:

H2: There is a significant relationship between the CRM System quality and the CRM success.

Third hypothesis:

H3: There is a significant relationship between Service quality and the CRM success.

Fourth hypothesis:
H4: There is a significant relationship between Top management support and the CRM success.

Fifth hypothesis:
H5: There is a significant relationship between Technological readiness and the CRM success.

Critical Success Factors	**Measures of CRM Success**

Figure (3) Research Model adapted & edited from Bohling et al. (2006) and Croteau & Li (2003.

Research Methodology:
The Research Questions and Approach:

To examine the points previously discussed and address the issues raised, the primary research questions are: What are the critical success factors (CSFs) that influence the CRM success? And what are the measures of the CRM effectiveness. As theory related to these problems is in an early stage of development, an exploratory approach is undertaken in answering these questions, followed by a confirmatory analysis. This approach consists of two phases:

Phase 1: The development of a conceptual model and integrative framework based on the literature.

Phase 2: empirical evaluations of the validity of the framework from phase one.

The methodology used for the quantitative phase of the study involves the development and administration of a survey. A questionnaire is developed and subjected to a pilot study for validation. This is followed by a main study in which the survey is administered to a large group of CRM system users and customer relationship officer CRO employees in various Jordanian banks. Survey data was analyzed by conducting descriptive statistics, simple regression and analyses and stepwise regression and partial correlation.

Population and Sample:

The population of this study is comprised of all profitable banks which are located in the major cities and invited to participate in the study. The

population of the major cities comprise most of the Jordanian people and all headquarters of the banks are located in the major cities. These banks in the major cities were invited to participate in this study since they might have both financial and human resources that required to be heavily invested in the CRM system and share some other characteristics such as the nature of their business, their size, etc. Participants in this study were CRM system users and the CRO who are currently working in the Jordanian banks. The researchers have mailed the survey to the respondents in the banks that agreed to participate in this study. Thus, the sample of this study was a simple random sample encompassed 18 banks. 220 questionnaires were equally distributed across these participants' banks through mail. The returned questionnaires were 165, of which 11 were not used because of the missing data; therefore, the total number of responses was 154, which means that the response rate was approximately 70%. Moreover, the researchers received 8 responses from each participant bank in order to make sure that each bank has been represented well in the sample of this study.

Data Collection Methods:

The researchers conducted 10 interviews with both the users of CRM system and CRO employees in the Jordanian banks to gain a broad understanding about the factors that influence CRM effectiveness.

The questionnaire was administrated to measure the study's variables, in order to collect the primary data. For reliability, Cronbach's alpha calculation was carried out, CSFs (independent variables) alpha=0.888 and CRM success (dependent variable) alpha=0.750 which indicates high scale reliability. The researchers have requested 3 experts to evaluate the questionnaire's items, and according to their advice (Face validity), the researchers modified some of the items. In addition, confirmatory factor analysis was conducted to assess the overall measurement models and examine the disciminant validity of the research constructs. Moreover, the researchers have conducted a pilot study on 10 employees in the Jordanian banks in order to develop the last version of the questionnaire. Multiple items (five-point Likert-type scales) were used to measure each variable of the scale.

Sample Characteristics:

Table (4) depicts the characteristics of the study sample according to their gender, age, level of education, experience in title, and position.

Table (4)
Sample description

Gender	Frequency	Percent
Male	89	57.7%
Female	65	42.3%
Total	154	100%
Age	Frequency	Percent
20-30	110	71.2%
31-40	34	22.1%
41-50	7	4.8%
51 and more	3	1.9%
Total	154	100%

Table (4)
Sample description continues

Level of education	**Frequency**	**Percent**
High school	0	0%
College	13	8.7%
Bachelor's degree	120	77.9%
Master degree	21	13.5%
PhD	0	0%
Total	154	100%
Experience in title	**Frequency**	**Percent**
Less than 5 years	108	70.2%
5-10 years	27	17.3%
11-15 years	12	7.7%
16 or more years	7	4.8%
Total	154	100%
Position	**Frequency**	**Percent**
General manager	5	2.9%
Vice of general manager	7	4.8%
Assistance of general manager	7	4.8%
Department manager	24	15.4%
Employee	111	72.1%
Total	154	100%

Data Analysis Method:

Data analysis has been conducted through the following statistic methods:

1- Frequency and percent to describe the sample characteristics.

2- Linear regressions to test the hypotheses of study.

3- Stepwise regression and partial correlation to arrange the independent variables' effects in descending order.

Statistical analysis is not only useful in drawing conclusions from existing data, but also for drawing inferences and probable predictions in uncertain situations. There are many different types of statistical analysis that the researcher can use, however, the type of statistical analysis used depends on the type of data the researcher is working with. However, selecting the most appropriate analysis and test can sometimes be confusing.

In this study, the researchers analyzed the data collected through the suggested questionnaire by performing the regression analysis, linear regression, and frequencies through the utilizing of the SPSS.

Hypotheses Testing and Discussion of Results:

Variable Description

It can be seen from Table (5) that the mean for the respondents' answers is relatively high for the variables of the study, moreover, the standard deviation is not highly dispersed which indicate that there is an agreement on the answers to the items that measure these variables.

Table (5)

Mean and Standard Deviation

Variable	Mean	Standard deviation
Information Quality	3.97	0.52
System Quality	4.06	0.46
Service Quality	3.94	0.58
Top Management Support	3.90	0.61
Technological Readiness	3.92	0.63
Improving customer Satisfaction	4.09	0.59
Deepening Relationship with Customers	4.08	0.64
Increasing Customer Acquisition Rate	3.88	0.87
Increasing Customer Retention Rate	3.88	0.73
CRM success	4.02	0.52

The researchers also used simple regression to test the five hypotheses and the results are shown in the tables below.

First hypothesis:
H1: There is a significant relationship between Information quality and the CRM success.

Table (6)
Result of simple regression analysis between the information quality variable and the CRM success construct

Independent Variable	R^2	F	β	t	Sig.
Information quality	.230	30.459*	.480	5.519	0.000

**P<0.05*

The results of simple regression analysis, regressing Information quality against CRM construct is shown in table (6) as it can be seen in the table, the independent variable explained 23% of the variance in CRM construct (R^2=0.230, F=30.459, P<.05). Thus, the hypothesis that Information quality explains the variance in CRM construct was substantial; the result indicates that Information quality has significant positive impact on the CRM success.

Consistent with this result, Reid & Catterall (2005) state that good quality information enables business effectiveness and competitive advantage. They further state that high quality, well-integrated customer data are the cornerstone of a successful CRM project. It is vital when eliminating excess operational costs caused by redundant data and when trying to improve revenue through better customer targeting, satisfaction and retention (Reid & Catterall 2005). In line with this Kalkota & Robinson (2001) suggest that CRM involves three phases, all of which are designed to manage the customer life cycle and maximize customer lifetime value: acquiring new customers; enhancing the profitability of existing customers and retaining profitable customers for life. All of these phases are dependent on the quality of customer information and insight available to organization. By collecting information on-line the company has data that is already in a format to be pulled into its analytical processes without the steps of data entry necessary when collecting information through traditional channels. Streamlining of the data collection process enhances information quality and timeliness. The company can also capture more information through the on-line channel leading to better use of decision analytics to predict customer behavior, resulting in more targeted and customized relationships strategies.

Second hypothesis:
H2: There is a significant relationship between CRM System quality and the CRM success**.**

Table (7)
Result of simple regression analysis between the CRM system quality variable and the CRM success construct

Independent Variable	R^2	F	β	t	Sig.
System quality	.219	28.624*	.468	5.350	0.000

*$P<0.05$

The results of simple regression analysis, regressing System quality against CRM construct is shown in table (7) as it can be seen in the table, the independent variable explained 21.9% of the variance in CRM construct (R^2=0.219, F=28.624, P<.05). Thus, the hypothesis that System quality explains the variance in CRM construct was substantial; the result indicates that the CRM System quality has significant positive impact on the CRM success.

The result is on line with Kim (2004) who state that the high system integration and functionality resulting from the project improved system flexibility, response time, and usefulness. Integration of redundant customer databases also improved consistency and accuracy of customer information. Data warehouse usage facilitated diverse information analysis and application. He further state that overall, the new CRM system achieved a high level of IS quality. Both the high quality and the change management program lowered users' resistance to adopting the new system and facilitated a smooth transition to the new CRM process. A consensus emerged among branch, call center, and marketing department employees that the system works well and assists with CRM activities such as customer services and campaign design.

Kim (2004) also indicates that the new CRM process and system improved service quality in terms of responsiveness, assurance, and empathy. H-Bank measures customer satisfaction four times a year. Customer satisfaction scored between 77.4 and 78.0 out of 100 in 2000, prior to the project, and 82.8 after CRM implementation in June 2003. Consistent with this line is Blery & Michalakopoulos (2006), who point out that with the unique platform, the bank can offer a simple and integrated solution, which gathers together all the applications. The benefits of the platform are: a decreased need for data management, because data are taken from the central system; up-to-date information and phone calls appearing on the screen of the employee to improve performance and high degree of

coordination and services; all the networks are synchronized (telephone center, IVR, branch ATM); the employees of the call center are better equipped for servicing customers and receive information to develop the level of service offered to customers.

Rodgers & Negash (2005) point out that organizations may benefit by acquiring and storing knowledge in the organizations' memory and by making comparisons between current design (i.e., system quality, etc.) problems and the past solutions they have seen, retrieving that knowledge to generate new solutions to improve customer retention. This new knowledge can be created in specialized web-based knowledge centers assisting individual relations. This creation of new knowledge can be converted into new and improved products, services, and processes.

Third hypothesis:

H3: There is a significant relationship between Service quality and the CRM success.

Table (8)

Result of simple regression analysis between the service quality variable and the CRM success construct

Independent Variable	R^2	F	β	t	Sig.
Service quality	.224	29.429*	.473	5.425	0.000

*$P<0.05$

The results of simple regression analysis, regressing Service quality against CRM construct is shown in table (8) as it can be seen in the table, the independent variable explained ..224% of the variance in CRM construct (R^2=0.224, F=29.429, P<.05). Thus, the hypothesis that Service quality explains the variance in CRM construct was substantial; the result indicates that Service quality has significant positive impact on the CRM success.

In accordance with this result, Zineldin (2005) state that an effective customer relationship requires the marketer to make specific efforts to create, establish and develop a good quality package mix in order to be able to maintain and enhance the relationship intact. In short, marketers have to *clientize* their key customers: "The adaptation of the relationship philosophy as a key strategic issue is more important than a written plan. For example, a formal marketing plan for internal markets is of little value if customer contact staff are not motivated and empowered to deliver the level of service quality required (Payne and Clark, 1996). High quality customer service and support is the key to improving customer retention rates and maintaining a

good relationship with customers (Yelkur, 2000). In addition, Zineldin (2005) state that customer satisfaction and the maintenance of the customer relationship in fact depend on how well a product and service measures up to the customer's original expectations of quality.

Fourth hypothesis:
H4: There is a significant relationship between Top management support and the CRM success.

Table (9)
Result of simple regression analysis between the top management support variable and the CRM success construct

Independent Variable	R^2	F	β	t	Sig.
Top management support	.235	31.372*	.485	5.601	٭.000

*$P<0.05$

The results of simple regression analysis, regressing Top management support against CRM construct is shown in table (9) as it can be seen in the table, the independent variable explained 23.5% of the variance in CRM construct (R^2=0.235, F=31.372, P<.05). Thus, the hypothesis that Top management support explains the variance in CRM construct was substantial; the result indicates that Top management support has significant positive impact on the CRM success.

Senior management plays a key role in shaping an organization's behavioral activities and in providing an environment that is either conductive or inhibitory to the conduct of CRM (Campbell, 2003). Day and Bulte (2002) find that top management commitment to drive change is what set the true leaders apart from other strong contenders when it comes to CRM excellence.

Seeking employees' inputs in developing the processes that they will be using to achieve the strategy strengthens commitment to CRM success (Arussy, 2004). Ultimately, it is the employees who must use the new systems, and they must be committed to them from within (Burges & Turner, 2000).

Loyalty, commitment, and enthusiasm of the workforce together create the energy needed to be truly customer-centric (Fullerton, 2005).

Robber Schuessler, SAP America's vice president of business development comments, "In our experience, 75 percent of the investment in

a CRM project is change management, and 25 percent is software implementation and consulting," and goes on to observe, "Change management is a painful process requiring new perspectives, responsibilities, team setups and behaviors, and it's essential that HR and training are highly involved in synchronizing and supporting these activities" (Simson, 2002).

Acquiring CRM technology accomplishes nothing without ensuring that the right attitude and skill sets needed to optimally use the technology are present (Gulati & Oldroyd, 2005). Therefore, companies need to inculcate the right orientation toward customers and instill the right CRM-relevant skills among all employees. Without adequate acculturation and training, it is hard for those responsible for making CRM happen to take appropriate ownership of the program.

Frontline marketing employees such as sales and customer service personnel are in direct contact with customers. Performance of these employees directly influences customer experience and customer satisfaction which form customer perception of the firm's performance (Shi & Lip, 2007).

Frontline employee skills are reflected in their knowledge, courtesy, competence, and communication ability. These skills represent the service quality aspect of the firm (Parasuraman et al., 1985). Moreover, Chebat & Kollias (2000) reveal that capable marketing employees can help firms to produce happier and satisfied customers and thereby sustain the customer-organization relationships. Thus, it is meaningful to take into account frontline marketing employees' capability in the study of customer relationship management process. Improvement in employee capability leads to an individual's comprehensive ability improvement on using customer knowledge to handle customer-related tasks and to develop customer relationships.

In order to successfully conduct CRM, experts advise that training begin well in advance of launch, and that periodic training after roll out is designed and delivered. Also, training programs for new employees need to be developed on a continuous basis. Investing generously in relevant training could preempt stalling of many CRM initiatives (Quick Start, 2000).

Fifth hypothesis:
H5: There is a significant relationship between Technological readiness and the CRM success.

Table (10)
Result of simple regression analysis between the Technological readiness variable and the CRM success construct

Independent Variable	R^2	F	β	t	Sig.
Technological readiness	.402	68.608*	.634	8.283	٠.000

*P<0.05

The results of simple regression analysis, regressing Technological readiness against CRM construct is shown in table (10) as it can be seen in the table, the independent variable explained 40.2% of the variance in CRM construct (R^2=0.402, F=68.608, P<.05). Thus, the hypothesis that Technological readiness explains the variance in CRM construct was substantial; the result indicates that technological readiness has significant positive impact on the CRM success.

Information technology can play an important role in any CRM initiative, enabling the assembly of customer information and the creation of customer knowledge (Croteau & Li, 2003). Accurate customer data is essential to successful CRM performance (Abbott *et al.,* 2001) and, consequently, technology plays an important role in CM in adding to firm intelligence (Boyle, 2004). Technology that tracks and analyzes customer behavior allows companies to easily identify the best customers and focus marketing efforts and reward those ho are likely to by often. Acquiring a better understanding of existing customers allows companies to interact, respond to the needs of individual customers, and communicate more effectively to significantly attract and improve customer retention rates (Butler, 2000; Injazz & Popovich, 2003).

The promise of on-to-one relationships, customer value analysis, and mass customization (Hart, 1995) are now brought to reality by unprecedented advances in IT. Companies can now customize the shopping experience, better predict online buying patterns, entice customers with special offers or services, evaluate the economic advantage of each customer, and build long-term mutually beneficial relationships (Injazz & Popovich, 2003). Moreover, Jayachandran *et al.* (2005) find that companies with relational information management processes (ie, they have interactive customer contact, from which customer information is captured, integrated

and widely deployed and used across the business) tend to experience better customer satisfaction and customer retention outcomes.

According to Croteau & Li (2003), converting information into knowledge can be used to create personalized marketing plans that target each defined customer segment, achieve greater customer loyalty among its clientele, and provide customized products or services that mirror customer' needs. Knowledge can also be utilized to develop new products, new services, and design communication programs that attract, reward, and hence retain customers.

The stepwise regression and partial correlation used to determine the main independent construct (variable(s)) that influence the CRM success along with their ranks.

Table (11) shows the results of the partial correlation and the rank of the independent constructs (variable(s)):

Table (11)
stepwise regression and partial correlation between the independent variables & the CRM success

Rank	Construct	Partial correlation Value
1	Technological readiness	0.000
2	Top management support	0.025
3	Service quality	0.161
4	Information quality	0.411
5	System quality	0.800

As of stepwise regression and partial correlation, the rank (descending order; the most important factor is listed first) of the independent variables that influence CRM success are:

1. Technological readiness
2. Top management support
3. Service quality
4. Information quality
5. System quality

Mainly technological readiness and top management support are the two variables that influence CRM success.

Conclusion, Limitations and Future Research

The current study delivers valuable insights into the CSFs of Jordanian banks CRM initiatives. Moreover, this study sheds some lights on the major indicators of successful implementation of CRM initiatives. Organizations that are considering the implementation of a CRM strategy can utilize these results to become better acquainted with CRM applications. Results indicate that CRM technological initiatives are successful when high level of information quality, system quality, service quality and adequate top management support and accurate knowledge management capabilities, supported by a suitable information technology infrastructure measured by technological readiness, are in place. In addition, these CSFs have positive empirical effects on the major indicators of the successful implementation of CRM initiatives.

This research framework has been designed so that it is better suited to analyze broader IT-enabled innovations and can be used as a foundation for the further study of the perplexing factors that determine the achievement of successful CRM initiatives. The conceptual framework was derived from a proven technology adoption and impact model that has been adapted to apply to CRM technological initiatives. Iacovou et al.'s (1995) technology adoption framework - which was adapted in Croteau et al. (2003) - was also augmented in two ways. First, the strong positive association between top management support and observed innovation behavior in past studies was reproduced and turned out to be an additional critical enabler of CRM technological initiatives. Second, possessing knowledge management capabilities was proposed as another CSF of CRM technological initiatives, and found to be a key factor in an IT-enabled and knowledge-intensive initiative such as CRM.

This survey used a random sample of respondents to reduce variability and bias errors. The survey also examined the views of both the management and employees of the banks. External validity has not been minimized with the use of a sample comprising banks from the same vertical sector of industry. Moreover, the small sample size due to the targeted population also constitutes a limitation.

Data obtained from the mail survey provided merely a snapshot of organizations interested in CRM technological initiatives across the banking industry in Jordan. As such, additional follow-up research, to consolidate the issues encountered in this study, is undoubtedly an opportunity that could be pursued. Since CRM initiatives are long-term business strategies,

longitudinal studies could be undertaken with the same organizations to see if the same findings hold over time.

Managerial Implications

Results of this study confirm that the managers of the Jordanian banks must remain clearly focused on growing customer value and on building customer relationships that enhance the long-term flow of profits to the bank, if the scope of the CRM project is clearly defined (Kotorov, 2003) it helps to pave the way for the tactical implementation of CRM projects.

Results indicate that technological readiness is the most important and crucial CSF contributes to the CRM success. It can be an indication that a bank might posses appropriate information technology infrastructure and uses it also adequately to support and manage its customer-centric relationships. As a result, the actual benefits from using CRM are maximized since the level of knowledge will be maximized. Possessing knowledge management capabilities implies that information technology infrastructure is being utilized to reap technological benefits and create operational, analytical, and collaborative knowledge about customers, products, and services (Croteau and Li, 2003). Thus, the banks manager should bear this finding in mind.

Results also indicate that top management support in the Jordanian banks is a CSF in CRM implementation success. As related in the literature, if executives do not show any interest or involvement in the whole process, bank's members will not believe in such projects and will tend to resist instead.

Bank managers should also focus on the need to design a system quality CRM, information quality, and service quality. To this end, when designing or implementing CRM initiatives companies should heavily involve end users at all stages as this is the best way to ultimately ensure adoption. Leveraging employee input in CRM strategy development and application selection at the front end will lead to greater by-in post-implementation, as employees are experts in the types of information needed to enhance performance of their own roles (Kennedy et al., 2006). Also, frontline employees should be empowered so that they can have latitude over their service quality activities and abilities to address specific customer needs to act in a fully customer-centric manner (Sin *et al.*, 2005).

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Questionnaire items
Demographic Information

Gender
( ) Male ( ) Female

Age
( ) 20-30 ( ) 31-40 ( ) 41-50 ( ) 51 and more

Level of education
( ) High school ( ) College ( ) Bachelor's degree
( ) Master degree ( ) PhD

Experience in Customer Relationship Management (CRM) system or Customer Relationship Officer (CRO)
( ) Less than five years ( ) 5-10 years ( ) 11-15 years ( ) 16 years or more

Your position
( ) General Manager ( ) Vice of General Manager
( ) Assistance of General Manager ( ) Department Manager ( ) Employee

CSFs: Information Quality
1. CRM system provides accurate information about customers
2. Information on the CRM system is completed
3. Information about customers on the CRM system is up to date
4. the provided Information by CRM system is understandable
5. CRM system provides information which its content meets your needs
6. The CRM system provides the target reports

CSFs: System Quality
7. The CRM system is easy to use
8. The CRM system has good user interfaces
9. The CRM system is secure; it ensures that only authorized persons have access
10. No body can alter the CRM system data without authentication
11. The CRM system speed is very high
12. CRM system provides good assistance throughout the help screens
13. The CRM system provides clearly the different options
14. CRM system is customized for different cases that you encounter

CSFs: Service Quality
15. The CRM system handles customer's service problems in Dependable way
16. The CRM system performs service right the first time
17. The CRM system has the ability to prompt service to customers
18. The CRM system has the ability to give customers' individual attention
19. The provided services by the CRM system are convenience to the customers

CSFs: Top Management Support
20. Top management perceives CRM to be part of the organization's vision
21. CRM is regarded as a high priority by top management

22. The executive sponsors are regularly involved throughout the CRM project
23. Top management frequently contact the executive sponsors of the CRM system
24. Users of the CRM system in your bank are qualified to use the system

CSFs: technological readiness

25. The bank possess good information system infrastructure
26. The bank possess good telecommunication system infrastructure
27. The bank's information systems are integrated across several functional areas
28. The bank possess the necessary infrastructure to capture customer data from all customer interaction points
29. The bank has the ability to consolidate all acquired customer-related data in a centralized database
30. Data-sharing technologies are available in order to enable data access among information systems

Major Indicators of Successful Implementation of CRM

31. Customer retention rate for old customers is very high
32. Customer retention rate for new customers is very high
33. Customer loyalty is very high
34. The bank anticipation of emerging customers' needs is very high
35. The bank perceives customer satisfaction in terms of on timely delivered services
36. The bank frequently provides innovative products and services
37. The bank always customize products and services for customers
38. There is a strong relationship between the bank and its customers
39. A significant amount of service requests is being successfully handled by the bank

Open ended questions

Please answer the following questions briefly:

40. Please rate customer satisfaction of the services provided by the bank
Between 0 and 100%

41. What are the current problems that encounter the CRM system?
42. Could you suggest proposed solutions to improve the CRM system?

دراسة ميدانية لدور عوامل النجام الرئيسة في التطبيق الناجم لنظام إدارة علاقة العملاء

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الملخص:

لقد تم تبني و تطبيق مفهوم إدارة علاقة العملاء أو ما يسمى (CRM) على نحو واسع من قبل ألأعمال. وعلاوة على ذلك,وفي الجانب العملي فعلى الرغم من أن هناك بعض حالات النجاح في استخدام هذا النظام إلا أنه من حيث انتشار CRM في المنظمات يستمر كعملية بطيئة وإذا تم تطبيقه فان نتائجه تكون دون المتوقع. إن التطبيق الناجح لمبادرات CRM يعتمد عل عدة عوامل تسمى عوامل النجاح الرئيسة أو الأساسية مثل جودة المعلومات، جودة النظام، جودة الخدمات، بالإضافة إلى دعم الإدارة العليا وجاهزية التكنولوجيا وهي عوامل قد صيغ حولها فرضيات الدراسة التي اختبرها باحثو هذه المقالة بشكل تجريبي. بالإضافة إلى ذلك، فإن المؤشرات أو المقاييس الأساسية للتطبيق الناجح لمبادرات CRM مثل زيادة مدة الاحتفاظ بالعميل، وزيادة نسبة اكتساب العميل، تعميق العلاقة مع العملاء، تحسين رضا العملاء والتي قد تم أيضا اختبارها تجريبيا. وبناء على نتائج عينات التجارب المتعلقة بتطبيق الـ CRM في ١٨ بنك أردني ومن خلال مشاركة ١٥٤ مشارك في استبيان مدار ذاتيا في هذه الدراسة فأن باحثي هذه المقالة قد حددوا بنجاح العوامل المرتبطة بتطبيق CRM والمؤشرات للتطبيق الناجح والفعال كما ابرزوا مضمون الدراسة من حيث النتائج والتطبيقات من اجل بحوث مستقبلية.

المفاتيح:

نظم المعلومات، إدارة علاقة العميل، عوامل النجاح الرئيسة أو الأساسية، التطبيق الناجح (الفعال) للنظام.