SMALL BUSINESS USAGE OF IQMS CUSTOMER RELATIONSHIP MANAGEMENT APPLICATION: AN INVESTIGATION OF THE EXTENDED TECHNOLOGY ACCEPTANCE MODEL

by

Thuan Q. Pham

JELENA VUCETIC, Ph.D., Faculty Mentor and Chair

JOHN DENIGRIS, Ph.D., Committee Member

DANIEL ASQUINO, Ph.D., Committee Member

Kurt Linberg, Ph.D., Dean, School of Business and Technology

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Abstract

Customer relationship management (CRM) applications are no longer expensive software that only big companies could afford. Recently, small businesses have increasingly begun to take advantage of this technology. However, results have been reported far short of expectations. Even though there are numerous reasons for unsatisfactory outcomes, inadequate user acceptance or usage emerges as one of the most critical factors. The purpose of the study is to develop and empirically test an extended technology acceptance model that explains or predicts utilization of CRM applications implemented in small businesses. The model theorizes that perceived usefulness and subjective norms predict usage behavior while perceived usefulness is predicted by result demonstrability and job relevance. Results of multiple regression analysis from a survey of 82 IQMS customer relationship management module users in small companies across mainly North America indicated that the model is effective at explaining usage. Subjective norms show non-significant effects. The research adds to the literature another model for examining CRM application usage in small businesses.

Dedication

To my entire family, especially my wife, Dong Pham, and my parents, Anh Nguyen and Thu Pham. Without their love, patience, and support, this would not have been possible.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

Business has long recognized the importance of managing and serving its customers. How a company acquires, serves, and retains customers is crucial for success in today's competitive environment (Buttle, 2004; Rajola; 2003; Thakur & Summey, 2005). To accomplish these goals, companies need superior strategies that are supported by efficient and effective business processes. Information technology continues to play a vital role in fulfilling these demands. Developed over the past decades, customer relationship management (CRM) applications comprise the latest generation of software that is used by organizations of various sectors to mange all aspects of customer service and relationship. These complex software packages are designed to allow companies to respond effectively to shifting customer demands, thus promising them increasing revenues and retention while reducing marketing cost (Rigby & Ledingham, 2004).

Since its introduction in the 1990s, CRM is now considered "a necessity for survival" (Buttle, 2004, foreword) and "a basic building block of corporate success" (Rigby & Ledingham, 2004, p. 192). The software market for CRM reached an estimated $20 billion in 2001 according to the research and consulting firm META group (Rigby, Reichheld, & Schefter, 2002). Despite a dip in CRM sales from 2001 to 2003, company spending on CRM rebounded in 2004 (Ang & Buttle, 2006; Rigby & Ledingham, 2004). The technology research company IDC forecasted that worldwide sales of CRM

applications will increase at a compounded annual rate of 8.9% between 2004 and 2008 (Raman, Wittmann, & Rauseo, 2006).

Researchers have attributed many reasons for the growing popularity and adoption of CRM software. Advancements in technology, an increased awareness of new and better ways of doing things, a new focus on CRM as a possible source of competitive advantage, the aging of existing legacy systems, and organizations' overall desire for continuous improvement all contribute to the staggering growth of CRM software (Crosby & Johnson, 2000; Nairn, 2002; Thakur & Summey, 2005; Wilson, 2006).

Rigby and Ledingham (2004) noted that executives have started to realize the potential benefits of CRM. The authors cited the Bain & Company's annual Management Tools Survey of 708 global executives in 2003, which found that firms were experiencing increased satisfaction with their CRM investments. CRM moved to the top half of the list of 25 possible tools global executives would implement in 2003 compared to its near bottom ranking in 2001. In fact, 82% of the executive surveyed reported that they planned to employ CRM in their companies in 2003, a sharp jump from 35% reported in 2000. CRM is now considered an imperative for success in the current marketplace.

Despite the widespread popularity of CRM and the enhanced satisfaction from some adopters, its implementation has been nothing but disappointment to many. In 2001, from interviews with thousands of CRM adopters, the Gartner research group forecasted that over 55% of all CRM projects implemented from 2002-2006 would fail to yield expected results (Nairn, 2002). In a survey of 451 senior executives cited in Rigby et al. (2002), one in every five responded that their CRM initiatives had not only failed to deliver profitable growth but also damaged long-standing customer relationships. CRM

horror stories are rampant. One manufacturer retailer, for example, reportedly spent $30 million in a CRM solution in 1999 only to scrap the entire project in early 2001 because "customers had become increasingly irritated instead of loyal, as did the employees in trying to deal with them" (p. 102). While the company was struggling with its CRM deployment, its rivals were strengthening their market positions.

It is widely accepted that the scope of CRM systems and the breath of their organizational impact make implementation very complicated and time consuming. Rigby, Reichheld, and Schefter (2002) contended that the number one reason for CRM implementation failure is that "most executives simply don't understand what they are implementing, let alone how much it costs or how long it will take" (p. 102). In other words, the misconception that views CRM as a software/hardware tool that can be purchased and implemented without much effort is "at the heart of many CRM failures" (Thakur & Summey, 2005, p. 148).

With millions of dollars invested and squandered on CRM, the issue has caught considerable attention of both practitioners and researchers. This stream of literature has produced a multitude of various factors that were studied as critical to CRM successes or failures (Jain, 2005; Liu, 2007; Rackman, 2000; Roberts, Raymond, & Hazard, 2005; Viaene & Cumps, 2005). Among the critical factors identified, customer strategy, organizational alignment, and technological complexity prove to be the most prominent. While each is important and deserves attention, this study narrows the focus on one aspect of the organizational challenges inherent in CRM program implementations, that is, user acceptance and usage of CRM system. Although many studies have examined the role of user support in CRM deployment (Agrawal, 2004; Avlonitis & Panagopoulos,

2005; Corner & Rogers, 2005; Kennedy, Kelleher, & Quigley, 2005; Karahanna, Agarwal, & Angst, 2006; Viaene & Cumps, 2005), most of the research tends to focus on large companies. Little research, especially scholarly studies, has been undertaken to examine this facet of CRM implementation in small businesses.

For any information system to be effective, it has to be used (Mathieson, 1991). In fact, one of the first requirements for information technology to fulfill its potential is to gain acceptance and usage (Amoako-Gyampath & Salam, 2004; Cooper & Zmud, 1990; Karahanna, Agarwal, & Angst, 2006). User acceptance and usage of any information technology is key to its implementation success. CRM technology is no exception (Brendler, 2002; Corner & Rogers, 2005; Kennedy, Kelleher, & Quigley, 2005; Wu & Wu, 2005). However, since research results based on large companies may not apply to small business settings (DeLone, 1998; Lin & Wu, 2004; Montazemi, 1988; Raymond, 1985), it is important to examine CRM usage in its own implementation context.

Statement of the Problem

CRM systems are now considered by many as mandatory tools for operating and competing effectively in today's dynamic environment. Thompson, Jr., Strickland III, and Gamble (2005) stated, "Virtually all companies now provide customer-contact personnel with computer access to customer databases so that they can respond effectively to customer inquiries and deliver personalized customer service" (p. 358). Buttle (2004) explained that companies are motivated to implement CRM for both defensive and offensive reasons. Offensive reasons include a company's desire to improve profitability by reducing cost, and increasing revenue through enhanced

customer satisfaction and loyalty. Defensive strategies are necessary when leading competitors have adopted CRM successfully, and a company fears losing customers and revenue.

For a CRM project to be functional, it has to achieve an acceptable level of usage. However, determining how users use or reject a system can be a tricky business based on vendor literatures, consultant recommendations, and trade magazines (Ang & Buttle, 2006). Vendors tend to speak favorably of the software they sell. They have been known for providing unrealistic estimates. Even though the best estimate for a CRM implementation is around 24 months, one vendor cited by Rigby and colleagues (2002) claimed that they could offer CRM "in 90 days and an aggressive competitor has responded by promising it in only nine" (p. 102). Consultants may be biased due to their limited experience with certain CRM packages or monetary incentives for recommending specific applications. Trade magazines usually focus on big companies with multi-million dollar CRM initiatives since these generally catch more attention of readers.

On the other hand, academic research about CRM is still in its infancy with mainly case studies (Avlonitis & Panagopoulos, 2005; Jackson, 2005; Liu, 2007). The situation avails managers to few options other than relying on scholarly research on general IT acceptance and usage, which may prove of little practical help in small business environments. First, studies are typically conducted in large enterprise settings (Lin & Wu, 2004). Their results may not reflect the unique features of small organizations. Second, the profusion of models proposed in the research literature can be confusing to practitioners in choosing a particular one that would fit the technology and its deployment context (Venkatesh, Morris, Davis, & Davis, 2003).

Implementers of CRM in small firms are thus left guessing the main drivers of system usage. This uncertainty can lead to poor selection of a CRM software package, improper implementation, low system utilization, and eventual implementation failure. Once the CRM application has been implemented and used, managers continue to face situations where they need to increase system usage. Good knowledge of how users utilize the system helps diagnose problem of usage and facilitates the development and execution of interventions to bolster usage (Adams, Nelson, & Todd, 1992).

Therefore, the research problem encompasses two main areas. First, adopters of CRM technology in small businesses commonly face difficulties in selecting and implementing a CRM software package for optimal system usage. Second, to ensure a sustained level of ongoing system utilization, information system and business managers need guidance on proper approaches to diagnose problem of usage and to devise effective intervention strategies.

Purpose of the Study

Research in IT acceptance has resulted in a number of models explaining and/or predicting user acceptance and usage of information technology, for example, the technology acceptance model (TAM) (Davis 1989; Davis, Bagozzi, & Warshaw, 1989), the theory of reasoned action (TRA) (Fishbein & Azjen, 1975), the theory of planned behavior (TPB) (Taylor and Todd, 1995), the motivation model (Davis, Bagozzi, & Warshaw, 1992), and the IT innovation diffusion theory (Moore & Benbasat, 1991). The abundance of research provides in-depth knowledge on the topic. However, the plethora of studies, especially those yielding conflicting results, makes it difficult for researchers

and practitioners in evaluating and selecting an appropriate model for a particular application within a given context (Venkatesh et al., 2003). The current research addresses this gap in the literature by synthesizing an extended TAM, which is tailored specifically for CRM technology in its usage context of small businesses.

The objective of the study is thus to examine CRM software usage in small organizations. Its specific goal is to identify factors that users of these systems perceive as key determinants of their usage behavior. Using a survey addressed to current users of IQMS CRM module in various small companies, the research seeks insights into the participants' perceptions of usefulness, result demonstrability, job relevance, and subjective norms as contributing to their usage patterns. The results of the study provide managers of small businesses with several key factors that they can focus on in achieving or enhancing CRM system usage.

Rationale

With the increase in IT adoption in small business over the past decade (Ballantine, Levy, & Powell, 1998; Harrison, Mykytyn, & Riemenschneider, 1997; Hussin, King, & Cragg, 2002), it is expected that smaller companies will significantly boost their spending on CRM technology. According to the Juniper Media Matrix report released Jan 28, 2002, the enterprise software market for small and mid-size business is projected for growth from $971 million in 2001 to $3.4 billion in 2006 (Harreld, 2002). Spending on CRM software by these companies is expected to reach $651 million, making up 19% of the total market by 2006, a jump from 10% in 2001. Increased availability of full-featured systems at reasonable cost and increasing demands among

small enterprises to improve business productivity and efficiency are the main factors that make this market the most rapidly growing segment of the enterprise software.

However, with the estimated failure rate of 55% for all CRM implementations from 2002-2006 projected by the Gartner research group (Nairn, 2002), there raises serious challenges for small businesses considering deployment of this technology. A large corporation is usually in a better position to withstand a failed CRM initiative than a small business. In a small firm with limited resources, such fallout can define its survival (DeLone, 1988). DeLone thus suggested small businesses to approach computing technology cautiously. CRM technology, if implemented properly, can contribute to the success of small business operations, but its risks are significant.

The above discussion underscores the critical importance for small businesses to implement CRM technology—and to implement it successfully—in order to stay competitive in today's dynamic environment. Since research has shown that user acceptance and usage of CRM is essential to its success (Corner & Rogers, 2005; Kennedy et al., 2005; Wu & Wu, 2005), it is important for implementers to understand key factors that determine usage behavior. Even though there is no dearth of literature on IT acceptance and usage, early studies tended to use simple technologies in academic settings to derive usage determinants (Davis, 1989; Davis et al., 1989). More recent studies have begun to investigate usage behavior in more complicated organizational contexts (Amoako-Gyampath & Salam, 2004; Venkatesh & Davis, 2000; Venkatesh et al., 2003), including CRM technology (Karahanna et al., 2006; Wu & Wu, 2005). However, since most studies examined usage in large companies, their results can be problematic in applying to small business environments (Attewell & Rule, 1991;

DeLone, 1988). This lack of research leaves practitioners in these companies with little guidance on selecting or implementing a system that can lead to a desirable level of usage. Small business needs and deserves its own line of research on the topic. The study responds to this gap in the literature by providing information on CRM technology usage determinants in small enterprises to assist implementers and managers in their efforts to achieve an acceptable level of system usage, thus increasing probability of implementation success.

Research Questions

Factors affecting user acceptance and usage of CRM technology can be quite complicated when selecting or implementing a software package. In addition, CRM applications for small business have distinct capabilities, features, and challenges that compound the difficulty of identifying key usage determinants. The overall goal of this research is to provide implementers and managers with improved insight and knowledge when making these difficult and complex decisions on CRM system implementations.

Research on IT acceptance and usage has long treated users' intention and attitude as the primary factors in their decision for using technology products (Venkatesh & Davis, 2000). Within this stream of literature, the technology acceptance model (TAM) emerges as one of the most parsimonious and powerful models in predicting and explaining usage across different technologies and settings. Factors related to usefulness, for example, relative advantage (Agarwal & Prasad, 1997) job relevance (Venkatesh & Davis, 2000), and technology-fit (Dishaw & Strong, 1999) have consistently shown strong influence on perceived usefulness, usage intention and behavior in various studies.

Meanwhile, subjective norms, a construct in the theory of reasoned action, have also proved to be strongly linked to intention/actual usage (Moore & Benbasat, 1991).

Drawn from the extant literature, this research investigates the following four research questions. Each of the research question gauges the users' perceptions of CRM technology relative to these factors against their usage of the technology: job relevance, result demonstrability, usefulness, and subjective norms. The specific questions are as follows:

Question 1: Is a user's perception of CRM technology usefulness independent of its job relevance?

Question 2: Is a user's perception of CRM technology usefulness independent of its result demonstrability?

Question 3: Is a user's utilization of CRM technology independent of its perceived usefulness?

Question 4: Is a user's utilization of CRM technology independent of his/her managers' and peers' subjective norms?

Research Hypotheses

Based upon the above research questions, this study tests the following null hypotheses:

Hypothesis 1: A user's perception of CRM technology usefulness is independent of its job relevance.

Hypothesis 2: A user's perception of CRM technology usefulness is independent of its result demonstrability.

Hypothesis 3: A user's utilization of CRM technology is independent of its perceived usefulness.

Hypothesis 4: A user's utilization of CRM technology is independent of his/her managers' and peers' subjective norms.

Significance of the Study

The review of literature on IT usage indicated a dearth of studies focusing on CRM technology implemented in small businesses. The current study addresses this gap by adding to the knowledge an extended technology acceptance model that is specifically created for and empirically tested on CRM applications deployed in these environments. Rather than replicating an existing model in a new context, this research selects important and relevant constructs from several key models of IT acceptance in the literature to synthesize an integrated model that is solidly grounded in theory and empirically tested in organizational context.

On a practical standpoint, good understanding of how users accept and reject CRM software is beneficial for a variety of purposes. Davis, Bagozzi, and Warshaw (1989) stressed that this knowledge is essential earlier in the design phase when many of the initial decisions on interface and functional designs of the new system are made. The ability to incorporate well-formed measures of determinant of users acceptance and usage at the point when there is greatest flexibility is "undoubtedly going to have an impact on our ability to weed out bad systems, refine the rest, and generally cut the risk of delivering finished systems that get rejected by users" (p.1000).

Besides, this knowledge can assist information system and departmental managers to increase probability of system success. DeLone (1988) claimed that lack of understanding about information technology is among the most frequently cited reasons for failure of small business IT endeavors. Implementers, empowered with the knowledge on certain factors that determine usage, can make more effective decision on selecting a software package that leads to enhanced usage, diagnosing problems with system usage, or devising appropriate intervention strategies to increase system usage (Adams et al., 1992).

Nature of the Study

This study follows a quantitative research approach. Quantitative research relies on postpositivist claims for creating knowledge (Creswell, 2003). Postpositivism is the successor of positivism. It challenges the traditional view of the absolute truth of knowledge. Ontologically, postpositivist researchers assume an objective reality that exists "out there" (p. 7) in the world, independent of humans, and whose nature is governed by laws or theories. The role of the researcher is to discover, verify, or test these theories so that the world can be apprehended. However, postpositivists acknowledge that reality can "only be known imperfectly and probabilistically because of the researcher's limitations" (Robson, 2002, p. 27). The epistemological belief of the postpositivist perspective is associated with the empirical testing of theories, whether they can be rejected or fail to be rejected. The widely accepted methodological approaches typically start with a theory and collection of data that either rejects or fails to

reject the theory. Then adjustments to the theory are made before additional tests are conducted.

With its root in positivism and an emphasis on analytical techniques, the quantitative research is effective in transcending individual differences, calculating aggregates, estimating group properties, identifying patterns in social systems and organizations, and predicting general tendencies (Creswell, 2003; Robson, 2002). The most popular quantitative research methods include experiments and surveys. Data are usually collected on a predetermined instrument for statistical analysis. Robson (2002) referred to the quantitative research approaches as fixed designs where the researcher knows in advance a substantial amount of theory about what she/he is going to study and how the study is going to be conducted before embarking on the data collection stage of the inquiry.

In this study, survey research is determined as the appropriate methodology for answering the research questions. The research constructs or variables are derived from existing theories in the literature. They are operationalized using extant validated measurements from prior research, which form the survey instrument. The survey is used to collect users' perceptions of CRM system usefulness, result demonstrability, job relevance, influence of subjective norms from managers and peers, and their level of usage. Multiple regression analysis is performed to analyze the data and determine if these constructs exert significant impacts on usage behavior.

Definition of Terms

Customer relationship management (CRM). The concept of managing customer relationship for maximum return on revenue and profit (Rigby et al., 2002), or a company's long-term strategy for sustainable market leadership resulting from carefully nurtured and strong relationships with customers (Thakur, Summey, & Balasubramanian, 2006).

Customer relationship management technology. Computer software that serves as the means for achieving CRM. It enables organizations to handle all aspects of customer service and relationship management (Buttle, 2004).

Enterprise resource planning (ERP) system. A software package that uses database technology to control and integrate all information related to a company's operation including customer, supplier, product, employee, and financial data (Ragowsky, Adams, & Somers, 2005). A single ERP system can record and process all business transactions, for example, inventory management, customer order management, production planning and management, distribution, accounting, and human resource management.

Sales force automation. The precursor of CRM software. A typical SFA application suite comprises of several integrated modules, for example, an opportunity management that tracks sales prospects, a sales-analysis system that analyzes customer data and forecasts future sales, and a sales-configuration system that helps users determine products and pricing options (Stein, 1998).

Small business. A company with less than 500 employees (Small Business Administration, 2007). This study uses the Small Business Administration's (SBA)

definition of size standards in determining a small business. Size standards define the maximum number of employees that a firm, including all of its affiliates, can have to be categorized as a small business for most SBA programs. The most widely used size standard for defining a small business is 500.

Assumptions and Limitations

Assumptions are aspects of the study which the researcher does not have control and assumes that they are true. This study is based on the following assumptions.

The research assumes that usage is a good indicator of IT performance or implementation success. Even though this is widely accepted in information system (IS) research (Heine, Grover, & Malhotra, 2003), some have argued that the relationship between usage and performance is mixed or insignificant. User performance is found to positively correlate with increasing system usage but beyond a certain point, an inverse effect can be expected (Ahearne, Srinivasan, & Weinstein, 2004). Excessive utilization of a system may interfere with an employee's job or indicate that the system is ineffective for the job requirements. Avlonitis and Panagopoulos' (2002) study of CRM technology in three pharmaceutical companies reported a non-significant association between system usage and salesperson performance. The researchers concluded that "simply infusing a CRM system into the sales force is just not enough to boost sales performance" (p. 364). One possible explanation for this weak linkage is attributed to the complex process through which information technology improves performance, termed as the "information technology-productivity paradox" (p. 364).

Another assumption is that users can provide reliable measurements of their usage frequency. All information on usage is self-reported. There are mixed opinions on the reliability of self-reported measurements. Some suggested that self-reported usage measures are biased (Straub & Limayen, 1995) while others contended that self-reported usage measures correlate well with actual usage measures (Taylor and Todd, 1995). Vankatesh and Davis (2000) noted that the interchangeability of self-report and objective usage measures still remains a controversial point in IS research.

Cooper and Schindler (2006) stated that there exists neither a perfect study nor a perfect research design. Good research requires the researcher to report with "complete frankness, flaws in procedure design and estimate their effect on the findings" (p. 23). To the best knowledge of the researcher, the current study suffers from the following limitations.

The sample in the study only included users of IQMS CRM module (IQCRM) in mostly small manufacturing companies. This module is an optional function embedded in IQMS ERP system termed EnterpriseIQ. Therefore, the sample is quite context specific. Cautions need to be exercised when generalizing the results to a general population of CRM users in small businesses.

The relative small size of the sample used in the study can create potential biases in findings. This may be due to the limitation of Internet surveys. Respondents may not be comfortable with filling out online surveys. Another possibility is due to the fact that the survey has some work-related questions on usage of the CRM application that respondents may not want to disclose. Or, there may be other latent factors that inhibit participants from completing the surveys. Although the sample size is considered large

enough in this study, from a statistical point of view, larger samples can yield more reliable results.

The research is conducted in mandatory usage contexts. Researchers have provided mixed arguments on usage of systems that is considered as a job requirement. Adams, Nelson, and Todd (1992) argued that in such cases, users' perceptions of the technology may have little influence on overall levels of usage. On the other hand, Amoako-Gyampah and Salam (2004) contended that non-voluntary usage of IT at work incorporates both mandatory and discretionary usage. The mandatory usage comprises a base level needed to perform minimal job functions and usage beyond that might be considered voluntary. Since this study does not measure mandatory and voluntary usage separately, its results need to be interpreted with this limitation.

Another potential problem in examining determinants of mandatory use is the notion of "captive use" (Adams et al., 1992, p. 233). Users may be trapped in situation where usage is mandated but there is no other alternative to effectively complete the job. In other words, users may not like using the system but they have no other choice. Therefore, any other factors relating to usage may not be significant.

Organization of the Remainder of the Study

This study is comprised of five chapters. Chapter 1 has provided an introduction with background and overview of the proposed study. Chapter 2 reviews the existing literature relevant to the study to provide the theoretical and research support for the study. Chapter 3 describes the methodological procedures to be used in collecting and analyzing data. Chapter 4 presents the findings of the study, assessments of the research

instrument reliability and validity, and the results of hypothesis testing. Chapter 5 discusses implications of the study, suggestions for future research, and offers final conclusions.

CHAPTER 2. LITERATURE REVIEW

The purpose of the study is to help IS and departmental managers in small businesses to select and implement CRM solutions for their organizations that can lead to a desirable level of usage by focusing on the critical factors contributing to the employees' decision to use the technology. Specifically, the research helps managers determine whether perceived usefulness, result demonstrability, job relevance, and subjective norms significantly influence system utilization. Besides, the study also provides CRM software developers with information on the determination of factors driving end-users utilization of the system, which is valuable when designing or making modification to the software package.

The literature review in this chapter presents an overview and analysis of the three fundamental topics underlying this research effort: customer relationship management (CRM), IS research in small business, and research on IT acceptance and usage. The review on CRM provides a background of current concepts on managing customer relations, and discusses CRM technology and its implementation in organizations. This section ends with a concluding remark that user support and usage of the CRM software is essential to the success of its implementation. The discussion of IS research in small business covers the current state of research conducted in small organizations. It points out that IS research findings based on samples of large companies may not apply to small businesses and thus underscores the need for studying CRM usage within its implementation context of small businesses. The last section analyzes extant research on

information technology acceptance and usage. The concepts derived from this analysis serves as the framework for synthesizing the extended technology acceptance model with relationships that will be empirically examined in answering the research questions.

Section 1: Customer Relationship Management: Concept and Technology

Businesses depend on their customers for survival and growth. For long, firms have been searching for better and better methods to serve and retain existing customers while attracting new ones. With the current business conditions where competition is only a phone call or a mouse click a way, customer relationship holds the key to organizational success or survival (Colgate & Danaher, 2000). Attracting, satisfying, and retaining customers have become major challenges for business. A successful business strategy needs to begin with a philosophy that aligns company activities with customers' needs, in other words, customer relationship management (Curry & Kkolou, 2005).

In its general definition, CRM refers to the integration of customer strategies and processes, supported by means of relevant software, for the purpose of improving customer loyalty and thus increasing profits (Rigby et al., 2002). CRM is also regarded as a business strategy for the enterprise in creating competitive advantage and increasing shareholder value (Thakur, Summey, & Balasurbramanian, 2006). It embodies a strong commitment to gathering customer information, creating value for customers, and strengthening competitive advantage.

Despite its growing popularity and widespread adoption, CRM has "no clear paradigm and many definitions in its field" (Wright, Stone, & Abbott, 2002, p. 340). Pries and Stone's (2004) review of the literature highlighted several common definitions.

For example, CRM is a business strategy that maximizes value through winning, growing, and keeping the right customers. It is the integration of customer service quality and marketing, which serves dual purposes of acquiring and keeping customers. CRM comprises activities a business performs to identify, evaluate, acquire, develop, and retain loyal and profitable customers by supplying the right product or service, to the right customer, through the right channel, at the right time, and with the right price. Finally, CRM is a management discipline that requires businesses to focus on their relationship with customers. Each customer should be treated based on their unique demands in a relationship that feels like one-to-one.

It is worth noting that the concept of customer relationship management is not a recent phenomenon. Below, Ives and Mason (1990) vividly described the exemplary CRM practices at a local grocery store in Portland, Maine in the 1950s.

> After greeting you by name, Earl fed you some news-worthy gossip, criticized last night's game at the high school, or helped plan your menu. As Earl talked, he cleaved off extra thick chops, ground beef to your specification, or served up a sample sliver from the big cheese wheel. A pint of hand-packed chocolate ice cream, some fresh ground coffee, five fresh ears of corn, two ripe tomatoes, and five large eggs topped off your sack…You could charge and pay your bill at the end of the week, or with special arrangements, at the end of the month. If you paid it on time there were free lollipops for the kids or a juicy bone from the freezer as a special treat for your dog or soup pot. If you were sick or lazy you could call in your order to Earl and he would send it up later that day. (p. 52)

In the early 1980s, Theodore Levitt raised the importance of CRM in his argument that "relationship between buyers and sellers is much like that between husbands and wives" (Levitt, 1983, p. 87). Using this metaphor, the author explained that "sales, then, merely consummates the courtship, at which point the marriage begins" (p. 87). How good the marriage depends on how well the seller maintains the relationship. It is the quality of this marriage that will determine whether the seller can continue or expand its business, or faces troubles and divorce. Levitt established that "a company's most precious asset is its relationship with its customers. What matters is not whom you know but how you are known to them" (p. 91). Relationship management, according to the author, deserves a special field all its own and is "as important to preserving and enhancing the intangible asset commonly known as 'goodwill' as is the management of hard assets" (p. 93).

Wright, Stone, and Abbott (2002) explained that the fundamental of modern marketing is based upon the satisfaction of the needs of customers and the needs of the organization in meeting expected profits. The mechanics for marketing comprise of a number of forms and tactics. Traditional marketing activities tend to rely on a mass-audience focus with heavy reliance on network advertising to achieve gains in market share. However, this marketing paradigm has started to shift toward marketing activities that emphasize relationships with individual customers, as a means of developing sustainable competitive advantage (Bauer, Grether, & Leach, 2002). The goal is to build a long-lasting relationship with each customer. It is argued that if a firm manages its customer relationships better than its competitors, it can achieve advantages in both

retaining existing customers and attracting new ones (Thakur & Summey, 2005). Getting close to the customer is thus considered key to success in the marketplace (Yu, 2001).

In the field of practice, "Today, most managers believe that CRM is fundamentally important to the future of their business" (Gordon, 2001, p. 6). Companies increasingly realize that they have to invest more in customer relationships and acknowledge customer intimacy as a competitive advantage (Sawy & Bowles, 1997). This awareness has led to copious investments in information technologies to better understand customers, and stay in touch with them. CRM applications emerge and skyrocket as a result.

The History of CRM Applications

Companies have long seeking for ways to improve their sale and marketing activities. Information technology is tapped because of its huge potentials in capturing, storing, and managing a large amount of data. The introduction of relational database, the booming of computer processing power, and the availability of mass storage all contribute to the ever increasing application of IT for sales and marketing activities (Ives & Mason, 1990).

Early insights on sales management system include Levitt's (1983) recommendations that customer relationship must be managed in a systematic and regular way. The sellers need to remain alert and sensitive to the customers' needs. To illustrate the practice, Levitt cited an example of a well-known Wall Street investment firm, which requires its security analysts and salespeople to make regular "constructive" contacts with their institutional customers (p. 93). The firm sets up a regular Monday-morning investment strategy commentary that analysts and salespeople can convey by telephone

to their customers. Analysts and salespeople are required to keep logs of the contacts, which are compiled, counted, and communicated to all in a weekly companywide report.

Sales force automation systems (SFA) are widely considered as the predecessors of CRM applications (Buttle, 2004; Liu, 2007). These applications were introduced in the late 1980s with the promises to drastically reduce selling cycles and facilitate relationships with customers (Stein, 1998). A typical SFA system includes several integrated modules such as opportunity management which tracks prospects and forecasts sales, customer data analysis, which analyzes customer sales, and sales configuration, which configures product specifications and determines pricing options.

Rajola (2003) pointed out that even though SFA systems bear the concepts of modern CRM, they are quite different from CRM applications. The main difference between the two is that earlier applications acted like "automation islands" (p. 24). They were not aimed at full integration and restructuring of organizational approaches. SFA software vendors originally emphasized productivity gains rather than strategic gains that are at the focus of CRM (Raman, Wittmann, & Rauseo, 2006). CRM serves as the culmination of an integrated or consolidated approach to customer strategy, business processes, and technological capabilities. Many hail it as the first time that strategy, organization, and information technology are marching "side by side to achieve a highly desired alignment" (Rajola, 2003, p. 24).

However, when CRM technology was introduced, it was not all greeted with warm blessings. Although some viewed it as "the most significant advance in the history of selling" (Rackham, 2000, p. 38), others who had gone through disappointing experiences with SFA applications remained skeptical. They viewed CRM just as "sales

force automation dressed up in new clothes" that are doomed to fail (Rackham, 2000, p. 38).

The Growth of CRM

CRM is one of the fastest growing practices in today's business environment (Raman et al., 2006). The CRM market has expanded dramatically since the early 1990s, enjoying a compound annual growth rates in excess of 50% for most of the 1990s (Buttle, 2004). Since the mid-1990s, CRM technology has grown from less than one-eighth of the overall enterprise application software to over one-third. The growth is reflected in the software sales figure. The research and consulting firm META group estimated that CRM software market would double from $20 billion in 2001 to $46 billion in 2003 (Rigby et al., 2002). Although actual sales drop sharply from 2001 to 2003 due mainly to the softening of corporate technology spending and the overall economy, CRM sales began to stabilize in 2004 with a 10% increase forecast for 2005 (Rigby & Ledingham, 2004), and an annual compounded 8.9% projected from 2004 till 2008 (Raman, et al., 2006).

Researchers have attributed various factors to the staggering growth of CRM technology. Among the popular drivers are the Internet, e-commerce, increasing volume of data, the need to increase quality of service, better awareness on customer relationship management, and an enhanced awareness of CRM as a source of sustainable competitive advantage (Rajola, 2003; Wright et al., 2002).

First, the Internet breaks down many barriers, enabling companies to target new markets, and to apply many new patterns of intermediation. It allows firms to adopt CRM to focus on effective management of customer relationship through many diverse tools

and to harness the power of online technologies to facilitate customer-supplier relationship building.

Second, the growth of e-commerce and mobile commerce as in wireless application for business has led to new ways of selling products, and new methods for managing customer relationship. Customers are also adapting to new ways of managing relationship with their suppliers.

Third, the ability to capture large data gathered by interactions with customers avail companies to the many possibilities that can be achieved from managing the data. Different technological and administrative systems have been created for the purpose of gathering, manipulating, and using the data.

Fourth, as products and services supplied to customers get more and more sophisticated, there are inevitably problems with managing the service experience for customers as in intangibility, variability, and inseparability of service. The issue of quality of service directly affects a company's relationship with its customer.

Fifth, companies have increasingly realized the importance of properly handling relationship with their customers to gain their trust and loyalty and to comply with regulatory requirements relating to managing customers, as in the strict requirement for customer data protection in financial services.

Finally, there exists a growing body of literature considering CRM as a potential source of sustainable competitive advantage (Rajola, 2003). The four forces that have contributed to the increasing relevance of CRM as weapons for competitive advantage include the market drivers, the customers-related drivers, the business drivers, and the

technological drivers. Each of these factors exerts unique impacts on a firm's ability to leverage CRM as a competitive advantage.

The market drivers include competitive environment, standardization of products and services, reduced switching costs, and aggressive price competition (Rajola, 2003). These lead to the importance of using CRM in achieving competitive objectives such as differentiation and customer loyalty. In order to stay ahead of competitors, a company must be able to constantly detect changes in customer needs and rapidly adjust its business accordingly (Jain, 2005).

The end of mass marketing and the growing of one-to-one relationship are key customer drivers that are deemed to replace the traditional four Ps of the marketing mix with the four Cs of rational marketing: "Cost, Convenience, Communication, and Customer needs and wants" (Rajola, 2003, p. 20). In this environment, customer integration can lead to a lasting competitive advantage (Jain, 2005). CRM emerges as a key strategic tool that can help companies realize this new concept of marketing.

The well-known 80/20 rule states that 80% of profits are generated by 20% of customers. Studies have also shown that the cost for acquiring a new customer can be up to five times as high as the maintenance costs for an existing customer (Burnett, 2000). Loyal customers are usually more profitable than new ones. Longer customer relationship brings higher profits. Therefore, a firm's ability to provide profitable customers with value added activities is considered "the real source of a company's competitive advantage" (Rajola, 2003, p. 20).

Lastly, even though information technology itself is seldom a source of competitive advantage (Ward & Peppard, 2003), the effective use of IT as in a seamlessly

integrated CRM system to enhance retention rate of profitable customers while reducing the cost of serving less profitable ones can indeed become a sustainable source of competitive advantage (Rajola, 2003). Research has indicated that firm-specific IT capabilities, such as a firm's ability to implement and sustain a successful CRM system while others flounder, provides it with lasting and inimitable competitive edge over rivals (Bahtt & Grover, 2005; Bharadwaj, 2000).

There is no doubt that "CRM has arrived" (Rigby et al., 2002, p. 102). It is getting more and more popular. In 1989, the authors noted that CRM was mentioned once in the media. By 2000, the number rose to 14,000. In their 2001 management tools survey, 72% of the executives planned to have their CRM programs in place by the end of 2001. This was more than double the 35% reported in 2000, making CRM the fastest-growing technique in the researchers' eight years of management tool analysis. The enthusiasm for CRM continued to rise. In 2003, 82% of executives responding to the same survey said they planned to employ CRM in their organizations (Rigby & Ledingham, 2004). CRM is increasingly considered as the "basic building block of corporate success" (p. 192).

CRM Implementation Literature

Despite impressive promises and being touted as a revolution in customer relationship management, CRM initiatives were nothing but disappointment to many. The literature reported an average fallout rate of 50% or more across industries (Ang & Buttle, 2006; Buttle, 2004; Rajola, 2003; Rigby et al., 2002). In a survey of 451 senior executives cited in Rigby and colleagues (2002), one in every five responded that their CRM initiatives had not only failed to deliver profitable growth but also damaged long-

standing customer relationships. More recent surveys reviewed by Agarwal, Harding, and Schumacher (2004) reported that more than half of all companies investing in CRM consider it a disappointment.

Horror stories of CRM failures are rampant in the literature. One financial corporation, for example, had to scrap a mammoth CRM and customer data warehouse project after spending almost $100 million (Rackham, 2000). The executive vice president ruefully commented, “We turned a manual mess into an automated mess, and as a result we just made the same mistakes faster and more efficiently” (para. 2).

It is worth noting that the widespread problem with CRM implementations was not unprecedented. Companies had experienced years of unsuccessful implementations with their sales force automation (SFA) programs long before the introduction of CRM (Stein, 1998). Stein (1998) cited a comment from Jeff Golerman, a research analyst with Gartner Group, Inc., who said about 55% of SFA projects failed to yield a measurable return on investment. Rackham (2000) gave a dimmer estimate of 80% of companies that spent huge amount on SFA software reporting that the results were disappointing. Tom Siebel, chairman and CEO of Siebel Systems acknowledged that companies had encountered numerous problems with SFA projects. “In a lot of cases, they’ve failed twice, two VPs have been fired, and the CEO is spitting mad” (as cited in Stein, 1998, p. 19). Considering the fact that CRM is not totally different from SFA and that many of the same vendors who developed SFA actually introduced and delivered this technology (Rackham, 2000), no breakthrough was expected of CRM.

However, CRM experiences have not always been negative. Rigby and Ledingham (2004) noted that after years of high costs and elusive benefits, companies

have started to reap strong returns on their CRM investments. When a CRM system is functional, it has the potentials to deliver outstanding results. Many companies such as Staples, Amazon, eBay, 3M, and Bank One have reported strong returns on their CRM investments including increased customer satisfaction, retention, and company performance (Jain, 2005). The CRM initiative at Brother International is another example of how CRM can generate impressive results (Rigby & Ledingham, 2004). Several years after the initial implementation, the company estimated saving of $635,000 in 2004 from its call centers due to reduced time to handle customer calls. In addition, the electronic product distributor could handle more calls while cutting down the hold time for incoming calls. Brother claimed that due to the enhanced customer satisfaction with the service from its call center, product returns fell by a third from 5% in 2000 to 3.4% the following year.

In an empirical study that evaluated the effects of CRM systems on customer satisfaction and retention in 172 US companies, Jayachandran, Sharma, Kaufman, and Raman (2005) found that companies with relational information management processes supported by CRM systems tended to experience better customer satisfaction and customer retention rates. In follow-up interviews, respondents stated that implementing CRM technology enabled them to communicate much better with their customers, helped capture data more effectively when there were a large number of customers, enabled customer service employees to access consolidated customer information, and improved senior management's decision-making ability by providing a "dashboard" of customer information and by highlighting critical problem areas (p. 189).

Features of an Operational CRM System

In order to implement a successful CRM project, it is important to establish a common understanding of what constitutes a functional or successful CRM system. The ultimate goal of a CRM investment is to satisfy business requirements for winning and keeping profitable customers. With this concept in mind, it is expected that different organizations and industries will have differing metrics for success. Corner and Rogers (2005) suggested companies to devise their own meter to measure success against.

Ribbers and Schoo (1992) measured the success of implementing an enterprise system such as CRM or ERP by using the two indicators: level of use of the new systems and procedures, and level of contribution of the program deliverable to the company. The level of use of the new system and procedure is defined by whether customers and end users are satisfied with the new system (e.g., customer satisfaction). The level of contribution of the program deliverable to the company is defined by two items: (a) whether the new system increases "efficiency" in handling firms' routine business activities (i.e., variability), and (b) whether the new system helps integrate different systems and platforms (i.e., integration). Rigby et al. (2002) considered CRM as functional when it enables companies to gather customer data swiftly, identify the most valuable customers overtime, and increase customer loyalty by providing customized products and services. A functional CRM solution should also make it cheaper to service existing customers and easier to acquire new customers down the road.

Corner and Rogers (2005) identified 12 features of good CRM operations. In their opinions, a perfect CRM system is unattainable. It just doesn't exist. The features that they suggested include system appreciation and use from top management, better

customer retention rate, improved landings of new accounts, realized benefits from employees using the system, little staff turnover within CRM function, favorable support and view of CRM operations from employees and their managers, and reliable customer data. Other relevant signs of good CRM initiative include manageable implementation overrun, quick turnaround in fixing minor flaws, and continuous efforts to maximize any potential use out of the system.

Critical Success Factors for CRM Initiatives

CRM implementations command considerable attention and interest in both academic and managerial settings. Researchers have studied various factors considered critical to the success or failure of CRM applications. This cumulative body of literature yields important insights on achieving results from CRM investments.

Thakur, Summey, and Balasubramanian (2006) recommended implementing CRM as a strategy. The authors claimed that the misconception that equates CRM with technology is "at the heart of many CRM failures" (p. 148). CRM is assumed to have the highest potential for success when the implementing firm considers its CRM initiative as a strategic direction with an emphasis on understanding the customers and strengthening their relationships with the firm.

Sweat (1999) proposed using our knowledge of past enterprise resource planning software implementations to elicit lessons for CRM initiatives. He identified several key elements that can be applicable to CRM adoption. More user involvement is better than less involvement. The same applies to short implementation projects versus drawn-out projects. Light customization is better than heavy customization. Finally, a tight focus is better than a wide-reach focus.

Lindgreen (2004) studied the implementation of CRM at Dagbladet Borsen publishing company in Scandinavia. Four years after introduction of its CRM program, Dagbladet Borsen increased its newspaper circulation by 40% and advertising revenue by 50%, while total revenue more than doubled. The success factors in Dagbladet Borsen case are organized around eight areas: commitment of senior management, situation report, analysis, strategy formulation, implementation, management development, employee involvement, and evaluation of loyalty-building processes.

In another case study of implementing CRM at the Indigo division of HP, Pliskin and Ben-Zion (2005) identified several key lessons from the experience. Among them are the alignment of people, process and technology around the CRM strategy, involvement of end users in all development phases, and support of executive and middle level management.

Ribgy and colleagues (2002) analyzed successful and unsuccessful initiatives from more than 200 companies in a wide range of industries in their search for the root causes of CRM failures. The researchers identified the four "perils of CRM" that could easily throw a CRM initiative into a CRM debacle (p. 101). The first pitfall that executives often stumble upon is to implement a CRM without a customer strategy. A CRM system can help firms build customer loyalty and acquire high-margin customers but only "after—and we repeat, only after—a traditional customer-acquisition and retention strategy has been conceived of and implemented" (p. 102). The second pitfall, considered the most dangerous by the authors, is to roll out CRM before preparing the organization for the challenge. Having a strategy alone is not enough. "A CRM rollout will succeed only after the organization and its processes - job descriptions, performance

measures, compensation systems, training programs, and so on – have been restructured in order to better meet customers' needs" (p. 104). The third pitfall is too much reliance on CRM technology. Assuming that technology drives CRM and that a high-tech solution is better than a low-tech one is a costly mistake. The final pitfall is when managers are "trying to build relationships with the wrong customers, or trying to build relationships with the right customers the wrong way" (p. 108).

Two years later, Rigby and Ledingham (2004) revisited the CRM implementation topic but focused instead on successful CRM initiatives. The authors refined the experiences of CRM leaders into four areas that companies should carefully consider when launching their CRM initiatives. First, CRM executives need to make sure that their CRM efforts are strategic. Since CRM involves complicated technology and business issues and requires significant investment of time and money, it should only be used to target areas that are vital to a company's competitive advantage. Lacking a strategic focus can put the company in a debilitating state when it needs the power necessary to tackle ingrained business process or redesign its organizational structure in order to gain expected results. Second, Rigby and Ledingham recommended narrowing the CRM initiatives to some "deep-seated, pernicious problems in a few areas that undermine overall performance" (p. 120) instead of encompassing the entire customer relationship cycle. Initial successes with a narrowly focused CRM often lead to additional refinements in other functions or even critical business processes beyond CRM. The fourth area worth consideration is whether the organization needs perfect data. Striving for perfect and real-time information comes at a high cost. The systems and processes required for collecting

and delivering it are expensive. Companies need to distinguish between areas that truly demand perfect data from those that can tolerate "good enough" information (p. 124).

In general, the prominent themes of CRM implementations in the literature tend to converge on three main areas: customer strategy, technological complexity, and organizational alignment, especially in term of overcoming employee resistance and garnering their support and use of the system (Corner & Rogers, 2005; Kennedy, Kelleher, & Quigley, 2005; Roberts, Raymond, & Hazard, 2005). Chen and Popovich (2003) combined all these three factors in their integrated CRM model for successful implementation. Other important aspects include the organizational and cultural dimensions of the organization. Finally, similar to other IT projects or initiatives, support from top management is critical and vital in all stages.

While each factor is important and critical to the success of a CRM implementation, the areas of interest in this study focus on the individual users of the system. The goal is to understand and enhance acceptance and usage of CRM technology. Researchers have long established that the employees are the "building blocks" of CRM successes (Kennedy et al., 2005, p. 256). While technology provides the necessary tools for CRM and a customer-focused strategy leads the company to the right direction, the users have the highest stake (Corner & Rogers, 2005). Even the best CRM strategies and the most sophisticated applications "stand little chance of succeeding without employee buy-in" (Kennedy et al., 2005, p. 259). Employees are the people most affected by the new systems and the ones most likely to render these systems functional. Brady et al. (2002) believed that the difference between successful CRM systems and inadequate

systems depends primarily on the ways in which people relate to their organizations and the systems they use.

In the field of practice, experiences have shown that it is the users throughout the organizations who can "make or break the CRM program" (Agarwal, Harding, & Schumacher, 2004, para. 4). An unfortunate result of a CRM project is when the system is used little or not at all. Agarwal and colleagues (2004) claimed that in the insurance industry, more than a third of the CRM modules developed during the past three years in functions such as marketing-campaign management, data analysis, and opportunity management "lie dormant" (para. 14). Rigby et al.'s (2002) analysis of the two failed CRM attempts at BMC software indicated that one of the main reasons for the successive failures was due to the managers' assumptions that CRM initiative did not require much top management support and that it would sell itself to the employees. Once the company addressed these issues, BMC succeeded in the third attempt.

Brendler (2002), who have consulted over 100 CRM implementations, claimed that the ignoring the human side of CRM implementation is the root cause of most CRM failures. It is the people who will determine how customer-centric an organization becomes, not the business processes and expensive systems.

> The most important change [in a CRM initiative] is never technical. The changes in what goes on inside of people, the ones who use all that technology—their perceptions, feelings, and ability to adapt and accept external changes that are occurring—is of great importance… That is why your people, not au courant processes and expensive systems will determine how customer centric you become. (p. 1)

There is no doubt that user support and usage of CRM technology is essential to its implementation success. Since organizational size is an important factor in studying IS implementation and adoption (Atwell & Rule, 1991), the subsequent section discusses the unique features of IT research in small business and underscores the importance of studying CRM system usage within the implementation context of small businesses.

Section 2: IS Research Needed for Small Business

The selection of small businesses, specifically, companies with fewer than 500 employees (Small Business Administration, 2007), as the context for the research is based on several reasons. First, there is a limited amount of IS research on technology adoption and/or usage conducted in this environment (Attewell & Rule, 1991; Lee, 2004). One possible reason small businesses are often neglected in IT system research is because they do not usually have large enough IT departments that are of interest to researchers. Besides, some researchers have also explicitly undermine the complexities of implementing CRM and the usefulness of such tool for small businesses For example, Wright et al. (2002) contended that for a small company employing few people, the integration of process and structure to foster trust and commitment to underpin marketing efforts "might be easier [than large companies] to implement" (p. 34). Such positions can be dangerous because their implications downplayed the role of CRM investments in small companies and discouraged potential researchers from studying CRM technology in small businesses, which in turn could have profound implications for CRM and its research in these environments.

Second, despite limited representation in the literature, small business is widely accepted as an important and integral part of every nation's economy (Street & Meister, 2004). According to the Small Business Administration (SBA) report, "The Small Business Economy," released late 2006, small businesses, defined as those with fewer than 500 employees, make up 99.9% of all companies in the United States (Perriello, 2007). They employed more than half of the entire U.S. workforce and accounted for roughly half of all non-farm gross domestic products in fiscal year 2005. Scott (2003) noticed an overall movement in organizations from unitary to milti-divisional to network forms. Independent and tightly coupled companies are being replaced by interdependent, loosely-coupled networks and alliance firms.

Third is the growing adoption and utilization of IT in small businesses. The widespread availability of microcomputers has driven down the cost of small business computer systems to a point where "nearly all businesses, no matter how small, can afford computer power for their information processing needs" (DeLone, 1988, p. 51). This availability of computing technology at reasonable cost together with increasing demands among small enterprises to improve business productivity and efficiency makes full-featured software like CRM for small business the most rapidly growing segment of the enterprise software market (Harreld, 2002).

Fourth, small businesses bear some unique differences from their larger counterparts, which can make research results based on samples of large companies inapplicable. Welsh & White (1981) argued that "the very size of small businesses creates a special condition – which can be referred to as a resource poverty – that distinguishes them from their larger counterparts and requires some very different

management approaches" (p. 18). Therefore, a small business should not be treated as "a little big business" (p. 18).

For instance, smaller firms are known for a number of strategic advantages in term of flexibility, informality, and adaptability in comparison to larger ones (Swamy & Balaji, 2006). This makes it easier for them to take advantage of rapid technological advances for competitiveness and to effectively cope with environmental uncertainties.

On the other hand, small businesses are notorious for lacking technical, financial, and human resources (Lin & Wu, 2004). Small organizations generally have inadequate hardware, software, and limited computing capabilities. They tend to choose the lowest cost information system which may be insufficient for their purpose and underestimate the amount of time and resource required for IS implementation (Thong, Yap, & Raman, 1996). Their IS personnel may not possess the necessary expertise for running the system due to difficulties to recruit top candidates (DeLone, 1988). Computer knowledge and technical support can be restrained as a result.

Therefore, research findings from a sample of large organizations can be problematic in applying to small business settings (Harrison, Mykytyn, Jr., & Riemenschneider, 1997; Hunter, 2004; Thong et al., 1996). As stated by Cooley, Walz, and Walz, (1989), "It is an oversimplification, however, to assume that the computing environment of small business is equivalent to that of large business" (p. 31). In order for small businesses to avoid the mistakes and common pitfalls from system implementations committed by their larger counterparts, it is important to take into account "the particulars of their environment" (p. 31).

Attewell and Rule (1991) pointed out that in general, research dealing with large corporations creates a potential bias in substantive conclusions about IT because firm size can affect several crucial organizational processes. Since more than half of the employees in the United States is employed by firms of 500 persons or less, such IT research fails to provide an accurate assessment of the effects of IT on individuals in many organizations. DeLone (1988) supported this view, indicating that smaller firms face many of the same IT adoption and implementation issues at large organizations but the ways small versus large firms deal with these issues vary significantly.

Finally, despite the limited research in the literature, CRM is critical to small businesses as it is considered a primary determinant of patronage and loyalty (Innis & La Clonde, 1994; Piron, 2001). It is one of the most effective means available to small businesses to distinguish themselves from larger companies. Without an effective CRM system, this function of the business can be labor intensive and sap resources already in scarcity for these organizations. For a small firm, CRM applications can represent a powerful tool to increase customer service offerings and at the same time alleviate the resource constraints for the small staff.

The literature review so far has highlighted how user acceptance and usage of CRM technology is vital to its implementation outcomes and why it is important to study system usage in its deployment context. The next section analyzes existing research on IT acceptance and/or usage and synthesizes a theoretical framework or research model for studying CRM usage in small businesses.

Section 3: IT Acceptance and Usage Research

Today, most organizations in all sectors of business, commerce, and government are fundamentally dependent on their information systems (Ward & Peppard, 2003). IT literally supports the operations of individual companies, ties together disparate supply chains, and links businesses to their customers. The critical role of IT in business is evidenced through the copious amount of capital invested in this technology. The U.S. Department of Commerce's Bureau of Economic Analysis estimated that by the end of the 20th century, nearly 50% of capital expenditures of American companies went to IT (Carr, 2003).

There is no doubt about the positive impact of IT on productivity, efficiency, and corporate performance, or profitability (Ravichandran & Lertwongsatien, 2005). For example, IT has been reported to enable firms to streamline business processes, integrate information into products and services, and improve the decision-making effectiveness, which in turn can be expected to affect firm performance. In a 36-month longitudinal study of eight hospitals on the impacts of the implementation of decision support system, Devaraj and Kohli (2000) found that "investing in IT does lead to organization profitability" (p. 62). Improved profitability was attributed to enhanced quality of products and services resulted from implementation of IT systems.

However, investments in information technology do not automatically generate results. Brynjolfsson and Hitt (1998) observed, "While the average returns to IT investment are solidly positive, there are huge variations across organizations, some have spent vast sums on IT with little benefit, while others have spent similar amounts with tremendous success" (p. 50). IS implementation has long been known for high costs with

a relative low success rate. According to a study by the Standish Group cited in Legris, Ingham, and Collerette (2003), only 26% of all MIS projects, and less than 23% of all large company projects, are completed on time and within budget with all requirements fulfilled. Over 46% of all projects are either over budget, late, or completed with fewer features and functions than originally specified. Almost one third of all projects (28%) were cancelled. Ward and Peppard (2003) warned that since investments in IT can be very costly, companies are poised to suffer financially when not being able to reap expected payoffs.

One of the first requirements for IT projects to be successful and information technology to fulfill its potentials is to gain acceptance and usage (Karahanna et al., 2006). An elaborate and expensive system with inadequate usage will eventually lead to failure or become ineffective (Markus & Keil, 1994; Mathieson, 1991). The more information systems are used, the greater the potential impact they can have on organizations.

Good knowledge of how people accept and use information technology serves many purposes. System developers, IS and business managers can benefit from this knowledge in all stages of system development, implementation, and maintenance (Mathieson, 1991; Taylor & Todd, 1995). Therefore, the usage behavior of adopters has endured as an important topic in IS research for the past several decades (Chau, 1996; Cooper & Zmud, 1990; Davis, 1989; Hu, Chau, Liu Sheng, & Tam, 1999; Venkatesh et al., 2003).

During the software development stage, designers have long employed a number of techniques to ensure that users will accept the system they build. User participation is

considered key in creating systems that can better match user requirements and capabilities than systems designed exclusively by IS professionals (Mathieson, 1991). However, this method is only effective if users participating in the development stages are representative of the final user base. For a system that is design for a broad spectrum of users, for example CRM software, user participation plus a general knowledge of user acceptance can help software designers tailor their efforts in areas that produce the most results.

After the system is developed and ready for purchase, a good understanding of factors that determine usage is valuable to practitioners evaluating different software packages and selecting the alternative that mostly likely leads to an enhanced level of usage (Szajna, 1994). Once a system is approved and implemented, this knowledge helps ensure effective deployment of IT resources in an organization through enhanced system usage (Davis, 1989; Mathieson, 1991). Managers can also take advantage of such knowledge to devise discretionary interventions in improving system utilization when necessary.

Measuring user acceptance continues to play an important role during the system maintenance phase (Mathieson, 1991). Over time, transformations in the organizations and the environments require modifications to the system. Adjustments made in the system to satisfy one group of users or to fulfill a new requirement can make the system less suitable for other purposes. Users' perceptions of the system thus change and what was once considered acceptable can become inadequate.

On the other hand, understanding determinants of IT usage is also important since other outcomes such as system success, performance, and IS satisfaction are predicated

upon this construct. DeLone and McLean (1992), in their comprehensive review of the literature, proposed an IS/IT success model that included six major dimensions: system quality, information quality, use (level of utilization), user satisfaction, individual impact, and organizational impact. Even though DeLone and Mclean did not empirically test their model, they found that among these measures of IS/IT success, the level of utilization and user information satisfaction are the most frequently used in research. Baroudi, Olson, and Ives' (1986) study of information satisfaction indicated that despite a lack of a significant direct relationship between system usage and IS satisfaction, the level of usage was found to be an important factor in user information satisfaction.

Research on IT Acceptance and Usage

Since the 1970s, IS researchers have started to investigate factors that facilitate the integration of IS into business (Legris, Ingham, & Collerette, 2003). Initial efforts produced long lists of factors that were deemed to influence the use of information technology. However, these disparate lists of factors that were studied as facilitators of IS use proved to be of little practical purposes. Beginning in the late 80s, researchers began to concentrate efforts on developing and testing models that can explain IT usage. The past decades of IS research on information technology acceptance and usage have yielded a variety of models and theories advanced to provide an understanding of the determinants of usage (Venkatesh et al., 2003).

Venkatesh and colleagues' (2003) review of this broad range of inquiry on IT usage reveals several major streams of research. One focuses on individual acceptance of technology by treating intention and/or usage as the dependent variable (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). Other streams have focused on implementation

success at the organizational level (Leonard-Barton and Deschamps, 1988, as cited in Venkatesh et al., 2003) and task technology-fit (Goodhue and Thompson, 1995), among others. While each stream of research makes important contributions to the literature, this research focuses on the theoretical models that employ intention and/or usage as the key dependent variable. Venkatesh and colleagues identified eight key competing theoretical models fitting this classification. Among them are the technology acceptance model (Davis 1989; Davis, Bagozzi, & Warshaw, 1989), the theory of reasoned action (Fishbein & Azjen, 1975), the theory of planned behavior (Taylor and Todd, 1995), the motivation model (Davis, Bagozzi, & Warshaw, 1992), and the innovation diffusion theory (Moore & Benbasat, 1991).

The abundance of research on IT usage provides in-depth knowledge on the topic. However, the profusion of studies, especially those yielding conflicting results, makes it difficult for researchers and practitioners in choosing and evaluating an appropriate model for a given application within a particular context (Venkatesh et al., 2003). The current research addressed this gap in the literature by narrowing analysis to just one of the most popular models, TAM and its application to CRM programs implemented in small business environments.

Introduction to the Technology Acceptance Model

TAM was originally developed by Davis (1989). Its goal was to "provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis et al, 1989, p. 985).

Davis (1989) based TAM on the theory of reasoned action (TRA, see Fig. 1) proposed by Fishbein and Ajzen (1975). According to TRA, beliefs influence attitudes, which in turn lead to intentions, which then become behaviors. TAM applies this belief-attitude-intention-behavior relationship to model user acceptance of IT. While TRA is generally designed to predict human behavior in a variety of situations, TAM is considered less general than TRA, designed to apply specifically to computer usage behavior (Davis et al., 1989).

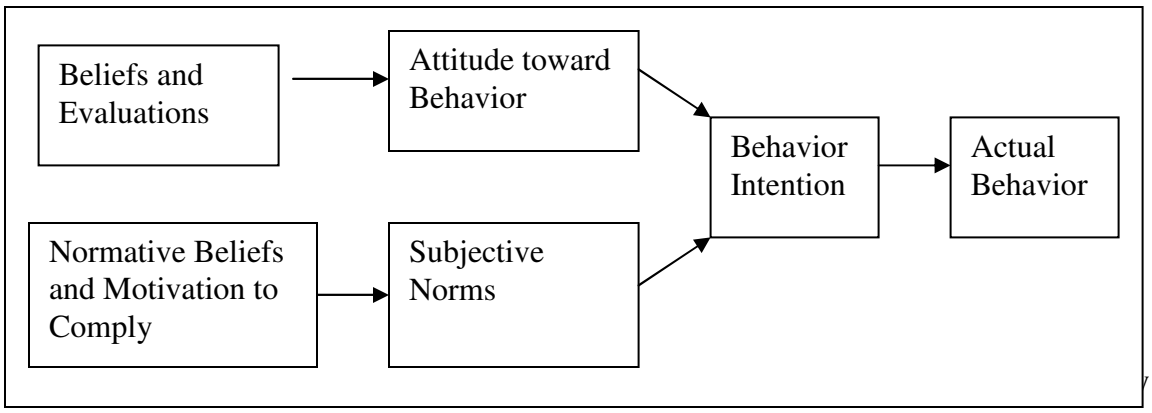


Figure 1. The theory of reasoned action

TAM posited that perceived usefulness and perceived ease of use are two primary determinants of user attitude toward accepting new information technology (Davis, 1989). Perceived usefulness is defined as "the degree to which a person believes that using a system would enhance his or her job performance" (p. 320). Perceived ease of use is "the degree to which a person believes that using a particular system would be free of effort" (p. 320). Between the two constructs, perceived usefulness is found to be more strongly linked to usage than is perceived ease of use. Davis suggested that ease of use may be an antecedent to usefulness, rather than a parallel, and direct determinant of usage. Figure 2 presents the original version of TAM.

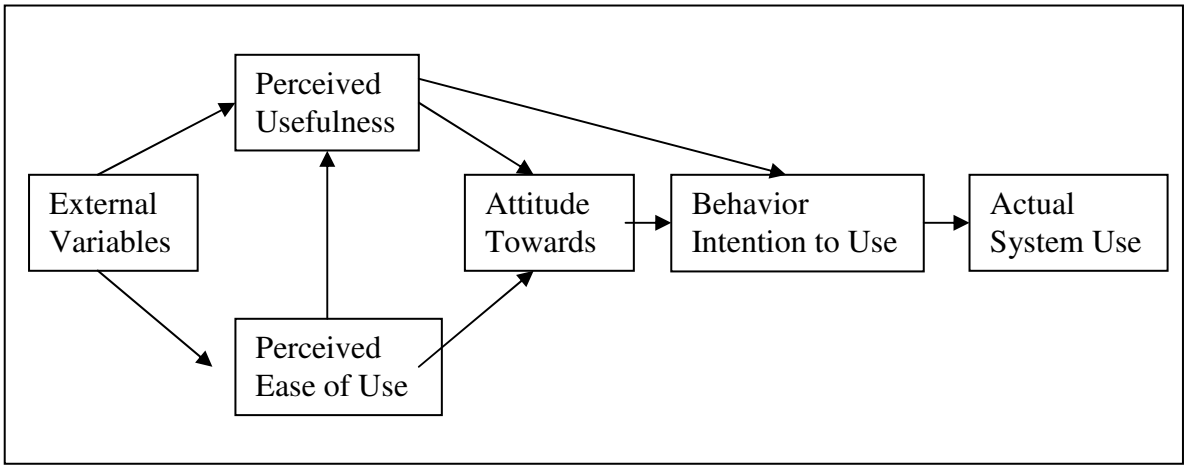


Figure 2. The original technology acceptance model

The theoretical justifications for the two constructs of TAM are grounded in prior research (Davis, 1989). The impact of perceived usefulness was suggested by the work of Schultz and Slevin (1975) and Robey (1979). Perceived ease of use is supported by Bandura's (1980) theory of self-efficacy.

Drawing from a series of statements from the anecdotal literature, Schultz and Slevin (1975) used factor analysis and identified 57 items that can be used to measure concerns of users of MIS and operation research techniques. In their use of the measurement, Schultz and Slevin (1975) found that the two factors most important to an individual's own intended use are: "performance and urgency (r = .60 and r = .59, respectively)" (p. 166). The authors suggested that the appeal of an operations research management science model may be greatest to a manager in terms of "what can the model do for him" (p. 166).

Robey (1979) utilized Schultz and Slevin's questionnaire to assess attitudes of 66 members of the sales force in a large industrial manufacturer toward the use of a computer-based information system. Among all the factors measured by the

questionnaire, the performance dimension was found to be most correlated with the two objective measures of system usage (r= .79 and .76). Robey (1979) posited, "A system that does not help people perform their jobs is not likely to be received favorable in spite of careful implementation efforts. A system that reduces rewards for users is likely to meet with disaster" (p. 37).

The perceived ease of use construct is supported by Bandura's (1982) extensive research on self-efficacy, which is defined as "judgments of how well one can execute courses of actions required to deal with perspective situations" (p. 122). Using microanalytic data analysis in multiple experiments, Bandura (1982) found that for a given task or assignment, the higher level of self-efficacy the participants perceived, the higher the accomplishments they could achieve. Applying these concepts from Bandura's theory of self-efficacy, Davis (1989) postulated that similar to self-efficacy beliefs, perceived ease of use can "function as proximal determinants of behavior" (p. 321).

In addition, Davis (1989) also cited theoretical frameworks from various other disciplines in buttress of the two constructs. For example, the cost-benefit paradigm from behavioral decision theory (Beach & Mitchell, 1978; Payne, 1982) suggested that perceived usefulness and perceived ease of use are relevant to a person's choice among various decision-making strategies. Tornatzky and Klein's (1982) meta-analysis of over 100 innovation studies showed that of the 10 innovation attributes identified, only relative advantage (comparable to perceived usefulness), compatibility, and complexity (the opposite of perceived ease of use) exhibit the most consistent significant relationship with innovation adoption and/or utilization decision (as cited in Davis, 1989).

Based on the supporting theories and conceptual meanings of perceived usefulness and perceived ease of use, Davis initially developed 14 potential measurement items for each construct. Pretest interviews were then conducted to assess the semantic content of the items. The items that best fit the definitions of the constructs were retained, yielding ten items for each construct. Davis tested the reliability and validity of the scales in a field study of 112 users concerning two different interactive computer systems. Using item analysis, Davis further refined the scales to six items per construct. Finally, a lab study of 40 users of two graphic systems was conducted to assess construct validity of the six-item scales.

The resulting scales commanded excellent measures of reliability and validity. Davis reported Cronbach alpha value of .98 and .94 for perceived usefulness and perceived ease of use. Both scales were found to score high on convergent and discriminant validity in their multitrait-multimethod analysis tests. Factorial validity was tested with a principal components analysis using oblique rotation. Both perceived usefulness and perceived ease of use items loaded on distinct factors, thus satisfying the requirement of factorial validity. From the results of the two studies, Davis concluded that the two scales possess strong psychometric properties and exhibit significant empirical relationship with self-reported measures of usage behavior.

Research on TAM

Since its introduction, many researchers have validated, tested, and replicated TAM in different settings and technologies. Adams, Nelson, and Todd (1992) replicated Davis' (1989) research by conducting two studies to assess the psychometric properties of the scales and the relationships among ease of use, usefulness, and system usage. The

construct measurements proved to be both reliable and valid in extended settings. The results of the two studies showed that the scales can discriminate between different technologies, thus suggesting that they can be sensitive enough to pick up differences in various types of information technology.

Saga and Zmud (1994) examined twenty empirical studies investigating the nature and determinants of technology usage. The authors found Davis' (1989) technology acceptance model as one of the most influential. Similarly, Hu et al.'s (1999) review of the literature showed that TAM appears to be the most promising among the models developed.

A more recent review of research on TAM published from 1980 to 2001 in six major IS journals yielded 80 articles, out of which Legris et al. (2003) selected 22 were for detailed analysis (Legris et al., 2003). In general, Legris and colleagues found that half of the 22 studies examined office automation tool like text editor and spreadsheet. Five of them involved software used in core business process. The sample size ranges from 25 to 2,500 participants across a wide range of organizational contexts. The models used are mainly TAM, complemented with the theory of reasoned action, theory of planned behavior, and external variables like subjective norms, task technology fit, and system quality.

Analysis of the articles indicated that TAM proves to be a useful model in understanding and explaining IT usage behavior (Legris et al., 2003). Even though there are some situations where study results are conflicting, overall, they are mostly convergent. The measurements used with the model also prove to be of high reliability and validity.

Several studies have also demonstrated TAM's superiority over alternative models such as the theory of planned behavior in explaining usage. Mathieson (1991) compared TAM with the theory of planned behavior on three attributes: the models' ability to predict usage intention, the value of information provided by the models, and the practicability of applying the models. Using Cooper and Richardson's (1986) guidelines for ensuring a fair comparison in a study of 262 students, the study found that both TAM and TPB predicted intention to use IS quite well with TAM exerting a slightly empirical superiority. TAM was found easier to apply and proved to explain attitude toward IS much better than TPB. It is considered the model of choice when this variable is of particular interest.

Taylor and Todd (1995) conducted another study to compare TAM with the two variations of the theory of planned behavior using data from both intention to use and subsequent use of information services by 786 business students in a computer resource center. Weighted least square estimation from LISREL 8 indicated that the three models were roughly equivalent in terms of their ability to explain usage. The decomposed version of TPB, which breaks attitudinal, normative, and control beliefs into multi-dimensional belief constructs, shows a moderate increase in the explanation of usage intentions. In addition, it provides managers with more useful information for successful deployment of IT. The authors concluded that if the sole purpose is to predict usage, then TAM may be preferable. The decomposed TPB, on the other hand, can be more effective for researchers or managers interested in the study of system implementation.

Researchers have also extended TAM with external variables or constructs from other models. Dishaw and Strong (1999) incorporated the constructs from task

technology fit model into TAM in their study of programmer analysts from 60 maintenance projects from three Fortune 50 firms. The researchers reported that the integrated TAM/TTF explains significantly more of the variance in usage than either TAM or TTF alone.

Wu and Wu (2005) extended TAM with seven constructs from innovation diffusion theory such as task characteristics, organizational characteristics, and environmental characteristics. Analysis of data from 190 respondents in large firms indicated that most variables from the innovation diffusion literatures significantly influence attitudes toward using e-CRM software and resulting usage behavior. The researchers concluded that the integrated TAM is better at explaining the diffusion of CRM in organizations.

In a similar approach, Karahanna, Agarwal, and Angst (2006) extended TAM with compatibility belief constructs from the innovation diffusion research to create an extended technology acceptance model. In their test of the model with a field sample of 278 users of CRM systems in a large bank, Karahanna and colleagues found enhanced explanatory power of TAM when incorporated with compatibility belief constructs. Most relationships theorized in the extended model were supported.

As of January 2000, Venkatesh and David (2000) found 424 journal citations to the two articles that introduced TAM (Davis, 1989; Davis et al., 1989) through the Institute for Scientific Information's Social Science Citation Index. On average, TAM consistently explains a substantial proportion of variance (typically about 40%) in usage intentions and behaviors. The authors claimed that within ten years, TAM has emerged

well established as a "robust, reliable, powerful, and parsimonious model for prediction of user acceptance" (p. 187).

Strengths of TAM

A distinct feature of TAM theorization is that the effect of external variables on intention to use is mediated by perceived usefulness and perceived ease of use (Venkatesh & Davis, 2000). External factors like individual, organizational and social characteristics are postulated to affect usage behavior through their effects on the person's belief structure. In other words, factors like individual skills from past experiences, organizational support (i.e., management commitment), or company culture (i.e., group norms) can influence a person's intention to either accept or reject an information system via their effects on that person's belief of the system usefulness and ease of use.

Therefore, TAM is widely accepted as a parsimonious way to detect antecedents of usage through the two constructs: perceived usefulness and perceived ease of use (Taylor & Todd, 1995). The parsimony of the model enables it to encompass diverse technologies and contexts (Davis, et al., 1989) while at the same time shows compelling results in explaining and predicting usage behavior (Saga & Zmud, 1994).

Another strength of TAM is its solid position in the literature. TAM has accumulated extensive empirical support through validations, applications, and replications (Venkatesh, 2000). Numerous studies have been conducted to test the model across different technologies and environments. TAM thus scores high in validity, reliability and generalizability. It has proven to be a powerful theoretical model in helping to understand and explain usage behavior in IS implementations.

On a practical standpoint, TAM can be applied with relative ease to gain a general understanding of users' reaction to a system by using Davis' (1989) standard measurements, which can apply to a variety of technologies and contexts (Mathieson, 1991). Another practical utility of TAM stems from the fact that ease of use and usefulness are two factors software developers usually have some degree of control over (Taylor and Todd, 1995). Since they are key determinants of usage, they can point designers to directions that have the greatest impact on user acceptance.

Limitations of TAM

Despite the above strengths and strong empirical support in the literature, TAM is not without limitations. According to TAM, intention is assumed to lead to behavior. Although there is substantial empirical support for the causal link between intention and behavior (Fishbein and Ajzen, 1975; Taylor & Todd, 1995; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000), the relationship between the two can be more complicated than presumed. Robson (2002) cited Henson's (1980) review of 46 studies, which found that twenty of them did not demonstrate a positive relationship between intention and behavior.

Adams, Nelson, and Todd (1992) pointed out TAM's limitations in explaining usage behavior in compulsory or "captive use" environments (p. 242). Perceived usefulness and perceived ease of use may have little effects on behavior when system usage is a job requirement. Users can also be trapped in "captive use" when usage is not strictly required but there is no alternative but to use the system to effectively complete the job. In these circumstances, usage will be high regardless of the perceptions on usefulness or ease of use.

Davis (1989) originally reported TAM's limitations in measuring self-reported usage. He recommended future research using measures of objectively recorded usage. In fact, the issue of self-reported measures has caught a lot of attention in the literature. Several studies have been conducted to further examine the nature of self-reported and actual usage. Findings have been inconclusive.

Straub, Limayem, and Karahanna-Evaristo (1995) tested all three constructs of a modified form of the technology acceptance model in their study of 458 voicemail users. The authors found that while self-reported measures of system usage are related to self-reported measures of perceived usefulness, and perceived ease of use, objective or computer recorded measures of system usage show a weaker relationship. Straub and colleagues concluded that self-reported and objective usage should be treated as separate constructs. Even though the researchers did not discard the integrity of TAM or prior studies that measured self-reported usage, they suggested that future research is needed to create measurements that are accurate enough to reflect actual usage of IT.

Recently, Barnett, Kellermanns, Pearson, & Pearson (2006) extended Straub et al's (1995) study on TAM with self-reported and objective measures of system usage. Consistent with the findings of earlier research, Barnett and colleagues found conflicting results for self-reported and objective usage constructs. Their study support Straub and colleagues' notion that self-reported and objective usage behavior should be modeled as distinct factors. Although the researchers did not reject the use of self-reported usage data, they warned that this construct should be used with extra caution. The authors suggested that the goal of the study needs to be taken into consideration when studying the outcome variable. For example, if the actual usage of technology is strongly linked to

performance effects for the organization, it is of paramount importance to utilize objective usage measure. However, if a general insight is required, subjective data seems to be a very viable and sufficient alternative.

Research Opportunities for TAM

Among the many studies employing technology usage as the dependent variable such as TAM that have been conducted and published in major information system journals, Vankatesh et al. (2003) identified several limitations of the existing literature. These can also serve as research opportunities. In general, the research usually uses students as subjects. Studies tend to be conducted in an artificial environment like an experiment. The technologies used are relatively simple like spreadsheet and word processor applications compared to more complicated technologies in organizational settings. Studies tend to be conducted in voluntary contexts. Extra caution is needed when generalizing the results to mandatory settings that are generally of more interest to practitioners.

In addition, researchers have also suggested additional research on extension to TAM (Venkatesh & Morris, 2000). In Taylor and Todd's (1995) comparison of TAM and the theory of planned behavior (TPB), the researchers found that when the belief structures are decomposed into separate constructs, TPB shows a moderate increase in its explanatory power of usage. The results of their study imply that the same effects can be expected when decomposing the two constructs of TAM into other external factors in the environment.

In fact, Davis (1989) originally recommended future technology acceptance research to address how variables other than perceived usefulness and perceived ease of

use can affect user acceptance. Moon and Kim (2001) argued that the factors influencing the acceptance of a new IT are likely to vary with the technology, the target user, and the context. The researchers suggested additional research to validate the model with different technology, users, and/or organizational contexts to extend its theoretical validity and empirical applicability. Similarly, Robinson, Marshall, and Stamps (2005) recommended extending the original TAM model with variables from the external environment to provide a more complete picture of the technology acceptance process.

With regard to the study of CRM usage, Wu and Wu (2005) stated that TAM tends to be relatively limited in "studying isolated individual perception of innovation usage" (p. 304). The researchers suggested integrating into TAM constructs from the innovation diffusion theory such as individual factor, organizational factor, task factor, environmental factor, and innovation factor to better explore the behavior of CRM usage in organizations.

In response to the above suggestions on extending TAM and a dearth of empirical research examining usage of CRM technology in small businesses, the current study synthesizes an extended TAM focusing on CRM technology implemented in small enterprises.

The Extended TAM

Figure 2 describes the proposed research model, referred to as the extended TAM. Using TAM as the starting point, this model incorporates subjective norms from the theory of reasoned action (Fishbein & Ajzen, 1975), job relevance from task-technology fit (Goodhue & Thompson, 1995), and result demonstrability from theory of IT innovation diffusion (Moore & Benbasat, 1991) as additional constructs while excluding

perceived ease of use, attitude, and intention constructs. The determination of variables is based on their theoretical underpinning and relevance to the study purpose. Cautions are exercised not to treat variables like in a "fishing trip, just throwing in variables in the hope that something will turn up. To reiterate the principle: the variables are included because of their relevance to your research questions" (Robson, 2002, p. 158). The next section provides a definition of each construct and develops the theoretical rationale for the causal relationships of the model.

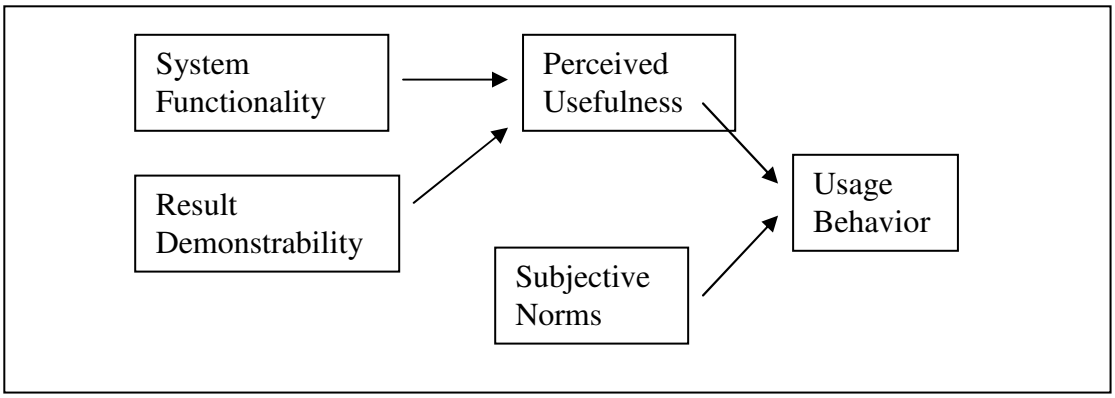


Figure 3.The extended TAM

Subjective norms are adopted from the theory of reasoned action by Fishbein and Ajzen (1975), from which the original TAM was developed. According to TRA, subjective norms, along with attitude, account for intention to perform a behavior and intention is considered as "the best predictor of a person's behavior" (p. 381).

Davis (1989) excluded subjective norms from TAM since he was primarily interested in studying the voluntary usage of technology. The subjects of his tests were students. Subjective norms were treated as one of the external variables, which are mediated by TAM's two determinants of attitude toward IT, namely perceived usefulness and perceived ease of use.

Subjective norms have been added to several TAM studies but their effects on usage were not significant (Davis et al., 1989, Mathieson, 1991). Taylor and Todd (1995) explained that "these results may have been due to the fact that there were no real consequences associated with the behavior under study and little external pressures to perform the behavior" (p. 150). Subjective norms are theorized to be more significant in organizational setting where actual behavior with real consequences is studied. In fact, studies in organizational contexts have reported subjective norms to be an important determinant of intention to use, actual use, and self-reported usage of IT (Hartwick & Barki, 1994; Moore & Benbasat, 1991; Sabherwal, Jeyaraj, & Chowa, 2006; Taylor & Todd, 1995; Venkatesh & Davis, 2000, Venkatesh et al., 2003). Wu & Wu's (2005) integration of constructs from innovation diffusion research into TAM indicated that organizational characteristics such as top management support are "the fundamentals" of a user's attitude toward and usage of CRM technology (p. 311). In another study of 240 salespersons from five pharmaceutical companies, Avlonitis & Panagopoulos (2005) found that sales supervisors play a major role in the CRM system acceptance process, by supporting and encouraging salespeople to use the software.

The role of management support in overcoming user resistance to CRM applications is also well documented in the literature (Brendler, 2002; Kennedy, Kelleher, & Quigley, 2005). In their case study of a CRM implementation at Electric Supply Board International, Kennedy and colleagues (2005) found that the successful introduction of CRM in an organization appears to be "greatly facilitated by senior management commitment and leadership" (p. 268). The central challenge of the CEO and executive management in an implementation effort is to convince their employees to accept and use

CRM technology (Brendler, 2002). "Nobody and nothing can take management and supervision's role in allowing employees to embrace the changes CRM will bring" (p. 2).

In this study, subjective norms are hypothesized as a direct determinant of CRM system usage. In addition to the above theoretical and empirical underpinning, this construct is assumed to be of particular relevance to the study purpose due to its potential strong impacts on system usage in small businesses. Considering the fact that small companies usually have restricted resources, it is unlikely that they implement CRM applications for voluntary use. Management is expected to exercise strong influences on usage of the system to achieve desired payoff from the investment. Besides, peer pressures are also posited to be more prominent in small business environments. With the tight personal networks and frequent personal interactivity commonly found in a small business, users are more likely to be overwhelmed by the subjective norms from management, colleagues, and others (Lin & Wu, 2004).

Perceived Usefulness

Perceived usefulness is retained from TAM as a direct determinant of usage. Davis and his colleges provided solid theoretical support for this construct. As Robey (1973) aptly phrased it, "A system that does not help people perform their jobs is not likely to be received favorable in spite of careful implementation efforts. A system that reduces rewards for users is likely to meet with disaster" (p. 37).

Empirically, various studies of IT acceptance and usage have demonstrated the power of perceived usefulness in determining usage intention/behavior. Usefulness is widely considered to be the most salient belief related to IT usage (Bhattacherjee & Premkumar, 2004). Venkatesh and Brown's (2001) extensive review of this stream of

literature indicated that constructs related to use-productivity contingency (e.g., perceived usefulness, relative advantage, job fit, etc.) have emerged as the strongest predictors of adoption and usage behavior. It is expected that people will not expend any effort to use any technology if it does not serve any purpose.

In addition, perceived usefulness has long been studied in the innovation diffusion research as relative advantage (Hova & Schuff, 2005; Rogers, 1962; 1983 as cited in Wee, 2003). Studies of various innovation types have demonstrated the strong effects of relative advantage on innovation adoption. With regard to IT innovation, Moore and Benbasat developed the theory of IT innovation diffusion, which included this construct as one of the seven factors relating to user perceptions that were theorized to be determinants of information technology adoption. Moore and Benbasat claimed that relative advantage or the "degree to which an innovation is perceived as being better than its precursor" (p. 195) is similar to the notion of usefulness in TAM. In their examination of end-user computing, Moore and Benbasat found a significant positive relationship on individuals' perception of relative advantage and their usage of personal workstations.

Job Relevance

Job relevance is adopted from the extended TAM named TAM2 by Venkatesh and Davis (2000). It is defined as "an individual's perception regarding the degree to which the target system is applicable to his or her job" (p. 191). The theoretical support for this construct can be found in Goodhue and Thompson's (1995) task-technology fit (TTF) model. According to this model, a technology will be adopted if it is "a good fit with the task it supports" (Goodhue & Thompson, 1995, p. 213). More specifically, TTF refers to the correspondence between task requirements and the functionality of

technology. TTF posits that technology adoption depends in part on how well the technology fits the requirements of a particular task. IT utilization and the level of fit together determine user performance or productivity from using IT. In this study, TTF construct in form of job relevance is hypothesized to influence usage through its impact on perceived usefulness.

Dishaw and Strong (1999) pointed out that one of the weaknesses of TAM is its lack of task focus. While TAM is effective at predicting attitude, intention and behavior through its two constructs, a more explicit inclusion of task characteristics may increase the model's explanatory power of IT utilization. On the other hand, TTF takes a more rational approach. It posits that users will choose to use IT solutions that provides benefits, such as enhanced job performance regardless of their perceptions or attitudes toward IT. Rather than viewing one model as superior to another, adding the strengths of TTF to TAM results in an integrated model that can integrate both beliefs toward IT and the fit between IT functionality and the users' tasks. Combining these models is expected to provide a better explanation of IT utilization than the attitude or fit model could separately.

In their empirical study that compared TAM, TIF and the integrated TAM/TIF model, Dishaw and Strong (1999) reported that "extending TAM with TIF constructs provides a better explanation for the variance in IT utilization than either TAM or TTF models alone" (p.17). TTF constructs were found to directly influence IT utilization and the two constructs of TAM, namely perceived usefulness and perceived ease of use.

In addition to the theoretical support from the TTF, Venkatesh and Davis (2000) also cited various prior research on IT acceptance that have examined similar variables

like job relevance such as job-determined importance (Leonard-Barton and Deschamps, 1988), involvement defined by Hartwick and Barki (1994) as personal importance and relevance, and cognitive fit (Vessey, 1991). The four empirical tests of TAM2 demonstrated consistent effects of job relevance on users' perceptions of perceived usefulness.

Job relevance is added to the extended TAM because of its potential significance in small business CRM systems. Considering the restrained resources of small businesses, it is unlikely that they can afford the most advanced and sophisticated CRM package. Small businesses can end up implementing systems that fit the budgets rather than those that fit the job requirements of its users. Therefore, it is hypothesized that, for small businesses, job relevance has direct relationship on perceived usefulness.

In addition, it is argued that in situations where usage is not voluntary, usefulness and utilization is more a result of how the technology fits than other attitudes of users toward using it (Goodhue & Thompson, 1995). Since the extended TAM focuses on CRM usage in organizational settings where usage is a job function, the perception of the system's usefulness and the resulting level of utilization is assumed to be directly influenced by how the users view the system fits their job requirements or in other words, job relevance.

Result Demonstrability

Result demonstrability, defined by Moore and Benbasat (1991, p. 203) as the "tangibility of the results of using the innovation," is hypothesized to be cognitive instrumental processes affecting perceived usefulness. Venkatesh and Davis (2000) argued that people form perceived usefulness judgments in part by cognitively comparing

what the system is capable of doing with what they can achieve from using the system. Users are expected to form more positive perceptions of the CRM system if the relationship between usage and positive results is readily discernable. In other words, "the more visible its [an innovation] advantages are…the more likely it is to be adopted" (Duncan, 1973, p. 39, as cited in Moore and Benbasat, 1991). It is assumed that in a small business environment, the effects from using CRM software are more readily visible to employees due to its simpler structure and fewer layers of hierarchy.

Empirically, Agarwal and Prasad (1997) applied Moore and Benbasat's (1991) theory of innovation adoption to study information technology acceptance and continued usage thereafter. Although result demonstrability is not a significant determinant of initial usage decision, it proves to be a major predictor of continued usage. The researchers concluded that "sustained use in the future is driven primarily by rational consideration: that is, the benefits offered by an innovation to potential adopters as well as their ability to consciously recognize and articulate these benefits" (p. 570). Since this study examined CRM system utilization after the initial usage decision, this construct is assumed to be of strong relevance.

Rationales for the Extended TAM

Studies have shown that TAM was more effective at predicting attitude and attention to use IT than actual usage (Mathieson, 1991; Straub et al., 1995). One possible explanation is that after the initial decision to use technology is made, other factors may exert more influence on usage than PU and PEOU. Examples of these include subjective norms and technology-fit, which have been theorized to significantly influence usage behavior after the initial decisions (Dishaw & Strong, 1999; Moore and Benbasat, 1991).

Since the extended TAM measures usage of the CRM application after some period of system use, it is considered more appropriate than the original TAM.

In addition, the extended TAM is theorized to better reflect the unique features of IT usage in small business environments. For example, the tight personal networks and the frequent personal interactivity commonly found in small businesses accentuate the importance of subjective norms (Lin & Wu, 2004). The fact that small organizations may implement CRM technology that fit their financial capabilities rather than fitting the job requirements of their employees due to resource constraint underscores the potential importance of job relevance in judging the system usefulness. Lastly, result demonstrability is assumed to be more readily visible in small organizations where there are generally a small number of employees in charge of CRM function compared to hundreds or thousands in a large company.

The extended TAM excluded the perceived ease of use construct due to its weak explanatory power in prior studies. For instance, Subramanian (1994) replicated Segars and Grover's (1993) confirmatory factor analysis study using structural equation modeling approach with different datasets to examine the relationship between usefulness, ease of use, and usage. The results of the study are quite consistent with prior research but with some variations. Subramanian found that perceived usefulness, not ease of use, is a determinant of predicted future usage. Similar results about the weak effect of the ease of use construct are also reported in Hu and colleagues' (1999) and Agarwal and Prasad 's (1997) studies.

The general explanations for the vague relationship between perceived ease of use and system usage is due to the enhanced computer self-efficacy possessed by current IS

users. Venkatesh and Davis (1996) conducted several experiments and found empirical support for the causal flow from computer self-efficacy to system-specific perceived ease of use. A person's confidence in computer-related abilities is expected to form the basis for the individual's judgment about how easy or difficult a new system will be to use. Since the CRM module of EnterpriseIQ is an optional feature of the ERP software suite, which is usually implemented after key functions of the system have been in place, it is expected that users are already familiar with the software and acquire a sufficient level of self-efficacy.

In addition, the exclusion of certain variables from the original TAM is consistent with prior research. For example, Davis et al. (1989) omitted attitude toward using a technology in their final model because of its weak linkage with intention and perceived usefulness. Legris and colleague's (2003) review of 22 TAM studies revealed no single study that incorporated all the variables and relations in the original TAM in its research model. Rather, various parts of the model were examined separately. In this study, variables and their relationships were determined based on their relevance to the study purpose and context.

CHAPTER 3. METHODOLOGY

This chapter delineates how the research questions are addressed and how the hypotheses are tested. More specifically, it describes the methodological procedures used for data collection and analysis. The researcher is expected to disclose in full detail all the relevant procedural details in conducting the research so that its methodological rigor can be evaluated, the study can be replicated, and research results can be verified (Rumrill, Fitzgerald, & Ware, 2000). This section should leave no question as to "what was 'done' to the participants" (p. 259).

The purpose of the study is to examine CRM usage in small businesses. Its main goal is to identify factors that users of these systems perceive as key determinants of their usage behavior. Using a survey addressed to users of IQMS CRM application (IQCRM) in small manufacturing companies, the research determines if participants' perceptions of usefulness, job relevance, result demonstrability, and subjective norms significantly contribute to their usage patterns. Based on the study purpose, the following research questions and hypotheses are posed.

Research Questions

Question 1: Is a user's perception of CRM technology usefulness independent of its job relevance?

Question 2: Is a user's perception of CRM technology usefulness independent of its result demonstrability?

Question 3: Is a user's utilization of CRM technology independent of its perceived usefulness?

Question 4: Is a user's utilization of CRM technology independent of his/her managers' and peers' subjective norms?

Research Hypotheses

In order to answer the above research questions, the current study tests the following null hypotheses:

Hypothesis 1: A user's perception of CRM technology usefulness is independent of its job relevance.

Hypothesis 2: A user's perception of CRM technology usefulness is independent of its result demonstrability.

Hypothesis 3: A user's utilization of CRM technology is independent of its perceived usefulness.

Hypothesis 4: A user's utilization of CRM technology is independent of his/her managers' and peers' subjective norms.

Research Design

A research design is the blueprint for conducting the research. It is a logical plan for "getting from here to there" where "here" is defined as the initial research questions and "there" as the conclusions about or answers to these questions (Yin, 2003, p. 20). Various models of research design have been developed in the literature (Robson, 2002). This study adopts the design framework proposed by Robson (2002) and Yin (2003),

which includes the study purpose, supporting theories, research questions, data collection, and data analysis. A well-fabricated design lays out a clearly defined and achievable plan for addressing these components. Other important aspects of a research design are its reliability and validity.

In this study, survey research is selected as the appropriate research method based on the research questions. As suggested by Creswell (2003) the determination of the research method is determined primarily by the research question. Yin (2003) added that the research question is the first and the most important condition for deciding on the appropriate research method. Survey research works best when the researcher has a substantial amount of conceptual understanding of the independent and dependent variables and a specific model of the expected relationships, which are tested against observations of the phenomenon (Pinsonneault and Kraemer, 1993). According to the authors, survey research is most appropriate when:

1. The central question of interest are questions about "what, how much, and how many, and to what extent" (p. 79).
2. Control of actual behavioral events of the independent and dependent variable is not possible or desirable.
3. The phenomena of interest are studied in their natural setting.
4. The phenomena of interest are contemporary or the recent past.

In addition, survey research is effective in transcending individual differences, calculating aggregates, estimating group properties, identifying patterns in social systems and organizations, and predicting general tendencies (Creswell, 2003; Robson, 2002).

Based on the above analysis, it is determined that survey research is appropriate for answering the research questions posed in the study. Other relevant advantages of survey research include its ability to collect data in a short period of time from a wide variety of participants (Cooper & Schindler, 2006; Fowler, 2002). With the use of statistical analysis techniques, survey research makes it possible to generalize results from a sample to a general population. In this study, surveys are sent to participants through e-mail. The survey and participants' responses are hosted by an online survey provider, SurveyMonkey.com. Data analysis is primarily conducted using multiple regression analysis in SPSS 14.0.

Theoretical Framework

The purpose of the study is to examine CRM technology usage in small businesses. Specifically, it seeks to identify factors that determine usage of the software. The theoretical framework for the study is based on extant research in the literature. Researchers have long studied determinants of IT usage (Venkatesh et al., 2003). A number of models have been developed to predict and explain usage behavior of information technology, for example, the technology acceptance model (Davis 1989; Davis et al., 1989), the theory of reasoned action (Fishbein & Azjen, 1975), the theory of planned behavior (Taylor and Todd, 1995), the motivation model (Davis, Bagozzi, & Warshaw, 1992), and the innovation diffusion theory (Moore & Benbasat, 1991). Empirical research has demonstrated that these models are effective at explaining variance in IT usage.

Based on the research literature, the current study focuses on TAM by Davis (1989) and extends it with subjective norms construct from the theory of reasoned action, result demonstrability from the theory of innovation diffusion, and job relevance from the task-technology fit. It specifically measures users' perceptions of job relevance, result demonstrability, perceived usefulness, and subjective norms toward their current usage of CRM technology. The conceptual framework for the study is operationalized in a survey instrument to be completed by a pool of existing IQCRM users.

Research Model, Constructs, and Measures

The research model is presented in Figure 2 in chapter 2. It is based on TAM and extended with constructs from the task-technology fit (Goodhue & Thompson, 1995), the theory of IT innovation diffusion (Moore & Benbasat, 1991), and the theory of reasoned action (Fishbein & Ajzen, 1975). The specific variables of interest in the model are perceived usefulness, job relevance, result demonstrability, subjective norms, and system usage.

The constructs in the research model and their theoretical grounding are discussed in chapter 2. This section briefly describes the variables, their operationalizations including validity and reliability estimates. Dependent and independent variables are operationalized through questions to determine the relationship between key model elements: job relevance, result demonstrability, perceived usefulness, subjective norms, and CRM system usage. The survey instrument combines validated measures of constructs used in previous research. This instrument, along with the cover letter, is presented in the Appendix.

The two independent variables are perceived usefulness and subjective norms. Perceived usefulness has two dimensions: job relevance and result demonstrability. The multi-dimensionality of perceived usefulness is supported in prior research (Dishaw & Strong, 1999; Venkatesh & Davis, 2000)

The dependent variable is IQCRM usage. Its measurements are adopted from Karahanna and colleagues (2006) who studied CRM system usage in a large bank with an extended TAM. Usage behavior is measured by asking participants how many minutes they spend using IQCRM during a typical day and how frequently they access the CRM application.

Perceived usefulness is based on Davis's (1989) measure. Davis reported that his measures exhibit strong psychometric quality, with a high degree of reliability and validity. Various studies have replicated and used Davis' measure and confirmed its rigor (Chau, 1996; Gefen, Karahanna, & Straub, 2003; Taylor & Todd, 1995). The measure is adapted for this study with minor change in the wording to fit the technology being studied.

Subjective norms measurement is adopted from Taylor and Todd (1995). In their use of the scales, Taylor and Todd reported reliability alpha value of .88 for this construct measurement. Result demonstrability measurement is adopted from Moore and Benbasat (1991) who reported that their scales achieve reliability value of around .80. The scales for job relevance are adopted from Venkatesh and Davis (2000) who reported a Cronbach's alpha from .80 to .97 across four studies. In addition to the assessment of reliability, the validity of these scales was also confirmed in prior research with confirmatory factor analysis (Taylor & Todd, 1995), principal components analysis with

varimax rotation (Moore & Benbasat, 1991), and principal components analysis with direct oblimin rotation (Venkatesh & Davis, 2000).

Survey Instrument Pilot Study

A pilot study is a test version of the study carried out before the actual one in order to detect any weaknesses or potential problems with the instrument or the data collection method. It provides the researchers with an opportunity to revise the design, sharpen up the theoretical framework, and rethink the sampling strategy (Robson, 2002). Robson suggested that the first stage of any data gathering should, if at all possible, be a test or a pilot study. It does not matter whether the researcher develops the instrument, adopts, or purchases an existing instrument, survey research should be piloted on a small scale "in virtually all circumstances" (p. 383).

The draft of this survey was designed and piloted as part of the requirements for the Survey Research Methods course taken at Capella University. Overall feedbacks from the participants indicated that the survey was easy to understand and complete. Several changes were made based on respondents' suggestions. For example, the estimated time to complete the survey on the cover letter was changed from 5 minutes to 7 minutes. The word "CRM" was spelled out in both the cover letter and survey instrument. Two more demographic questions were added to the survey. Since the changes to the survey questionnaire were not substantial, no further pilot study was conducted.

Sample Design

The theoretical study population consists of all users of CRM application in small companies. The study population includes users of IQCRM from companies with fewer than 500 employees. It is assumed that these users are representative of CRM application users in small businesses.

IQMS is a multifunction enterprise resource planning (ERP) software provider for mainly manufacturing companies. The company's flagship product, EnterpriseIQ, integrates real-time manufacturing management, accounting, and supply chain management into one database. IQMS customers include manufacturers in the automotive, medical, appliance, construction, and other industries around the world. The company has offices across North America, Europe, and Asia.

In its effort to become the leader in a single source software solution for manufacturing industry, IQMS introduced its CRM module termed IQCRM in 2000 as an optional function of the system. IQCRM is designed to track all of the customers' interactions in a single system. It is more than just contact management functions. IQMS boasts the module real value on its native integration with other functions within EnterpriseIQ. IQCRM users can access the ERP database for all information from the original sales contacts and background information through the entire sales, production, and shipping cycles.

As of July 2007, IQMS estimated that about 35% of its customers have purchased the optional CRM module. With a customer base of over 1000, this translates into over 350 companies that implemented the IQCRM. Since each company can have a different

number of IQCRM users, a rough estimate is an average of three users per company, yielding a total target population or the sample frame of approximately 1,050.

The target participants are reached by e-mail through an online Yahoo group named IQMS-users. IQMS created this online group for administrators and users of the software to freely exchange ideas and best practices. As of 7/8/07, there are over 800 members. The researcher sends an e-mail with a link to the survey to all registered members of the Yahoo group. Members who are not current users of the IQCRM are requested to ether ignore the survey or forward it to IQCRM users in their organizations.

It is important that the researcher collects sufficient responses from participants in order to draw statistically significant conclusions from the study. Cooper and Schindler (2006) recommended creating contingency plans for unexpected circumstances that can threaten the feasibility of the study. In this study, a contingency plan is necessary in case there are not a sufficient number of responses from the participants. If this turns out to be a potential problem, the researcher will contact several local CRM consulting firms found in Google searches and seek their assistance in distributing the survey to their CRM clients.

Data Collection

The survey is hosted by Survey Monkey, a professional Web survey hosting company for participants via the Internet. Survey Monkey is considered the leading survey tool on the web with over 80% of the Fortune 100 currently using its service (SurveyMonkey.com, 2007). It has been serving online surveys since 1999 and has been

growing ever since. One of the main reasons for choosing Survey Monkey service is its solid reputation for protecting customers' and participants' data and privacy.

Online or computer-assisted surveys offer some distinct advantages. First, the information collected and generated can be more accurate and complete, avoiding most of the errors resulting from the manual treatment of data (Shanks, 1991). Second, the entire process of conducting a computer-based survey can be less expensive with less labor involved, faster due to the speed of computing technology, and more powerful in term of its ability to handle complex transactions.

Despite the above advantages, online surveys tend to suffer from low response rate (Cooper & Schindler, 2006). The authors estimated an average return rate of less than 20% for Internet surveys. Low response rate can create bias for the study results and jeopardize its generalizability. If this turns out to a potential problem, it is disclosed as a limitation of the study.

The survey together with a cover letter is sent in an e-mail with a link to the secure survey hosted at Survey Monkey to each participant. To ensure the integrity of responses, the researcher takes advantage of the Survey Monkey data collector option of allowing only one response per computer. Once a participant has finished all questions and submitted the survey, she/he will not be able to re-enter the survey. However, participants who have not answered all the survey items can still access the survey one or more times to complete it. After logging on, they will be taken to the point where they previously left off.

The study is expected to collect 70 complete surveys. The minimum number of respondents required for data analysis is 61. This minimum sample size is based on

Milton's (1986) equation for determining adequate sample size, which is presented in the next section. This method is chosen because it accounts for a many factors unique to the study. As Fowler (2002) recommended, "The sample size decision…must be made on a case-by-case basis, with the researchers considering the variety of goals to be achieved by a particular study and taking into account numerous other aspects of the research design" (p. 35).

Sample Size Determination

The issue of determining how big a sample should be is one of the most commonly posed questions to a survey methodologist (Fowler, 2002). The literature offers a number of methods for determining sample size. However, one potential problem is that recommendations are generally based on "rules of thumb" (Milton, 1986, p. 113). These are inadequate for at least two reasons. First, rules of thumb are subject to individual interpretation resulting in many different rules. Second, even if there is a widely accepted rule of thumb, it would not be adequate. Milton contended that the determination of sample size is not merely a function of the statistically technique being used. Rather, it depends on two kinds of factors.

> First, there are real parameters in the population and they depend on the particular statistic one is estimating. Thus, for estimating a proportion in the population, one must provide a guess for the actual value of the portion in the population. For a mean, one must estimate the true population variance… The second factor to which sample selection is related is the standard error of estimate [or the confidence level] desired by the researcher. (p. 113)

For multiple regression analysis studies, Milton (1986) proposed using the formula for the F-statistic test for significance of a regression coefficient to derive the necessary sample size.

$$F = t^2 = B_j^2 / SEB_j^2 = (\triangle r_j^2/l) / [(1 - R^2)/(n - k - 1)]$$

Solving the above equation results in a formula for n as follows

$$n = k + 1 + t^2(1 - R^2)/\triangle r_j^2$$

Below is the explanation of the formula:

The t value represents the desired level of statistical significance, given a minimum addition to R^2 contributed by variable j. This is also known as the confidence level in calculating means or propositions. k is the number of variables in the final model. R^2 is the anticipated Pearson correlation coefficient for the model based on previous research. $\triangle r_j^2$ is the explained variance attributed to the jth variable when entered last in the regression equation.

To make it convenient for researchers applying the above sample size formula for multiple regression studies, Milton created a table that can be used to quickly determine the required sample size at a certain level of significance for beta coefficients. Below is the table for beta coefficients at the .05 significance level. This table is used for determining the sample size in the study.

Table 1. Sample Size Determination for Multiple Regression Studies: Significance Test for Beta Coefficients at the .05 Level (t = 2)

R^2	$\triangle r_j^2$				
	.001	.005	.01	.02	.05
.10	3601 + k	721 + k	361 + k	181 + k	73 + k
.20	3201 + k	641 + k	321 + k	161 + k	65 + k
.30	2801 + k	561 + k	281 + k	161 + k	57 + k
.40	2401 + k	481 + k	241 + k	121 + k	49 + k
.50	2001 + k	401 + k	201 + k	101 + k	41 + k
.60	1601 + k	321 + k	161 + k	81 + k	33 + k
.70	1201 + k	241 + k	121 + k	61 + k	25 + k
.80	801 + k	161 + k	81 + k	41 + k	17 + k
.90	401 + k	81 + k	41 + k	21 + k	9 + k

Note. From "A Sample Size Formula for Multiple Regression Studies" by S. Milton, 1986, *Public Opinion Quarterly*, *50*, p. 115.

Based on Table 1, the minimum sample size required for this study is 61 using values of 2, .30, 5, .05 for t, R^2, number of variables, and $\triangle r_j^2$. The t-level of 2 ($p < .05$) and $\triangle r_j^2$ value of .05 are considered acceptable for the study. This means that the sample is large enough to assure that any independent variable contributing an additional 5% to the model (if entered last) to be significant at the .05 level. The estimated value of R^2 is based on prior study of TAM using multiple regression analysis. Table 2 shows the R^2

value and sample sizes of previous multiple regression TAM studies. This minimum sample size of 61 is stricter than the rule of thumb of 10 observations per independent variable in the regression equation mentioned in Lucas (1991).

Table 2. Results of R^2 in Prior Selected TAM Studies

Study	R^2
Fang, Chan, Brzezinski, and Xu (2005)	0.25 ~ 0.269
Gefen and Straub (2000)	.18 ~ .20
Lederer, Maupin, Sena, and Zhuang (2000)	.15
Moon and Kim (2001)	.394
Venkatesh et al. (2003)	0.36 ~ 0.53

Data Confidentiality

Only the researcher has access to the protected electronic data collected at Survey Monkey. No identifiable personal information is collected or maintained on respondents. All data are reported on aggregate format. The researcher fully understands and abides by the guidelines required by the institutional review board for keeping the data confidential and using them solely for statistical analysis.

To ensure proper protection of confidential data during storage, the following procedures are followed. Once the data collection phase is over, survey responses are downloaded to Excel and imported to SPSS 14.0. Upon verification of no data corruption, the researcher deletes all data retaining to the research permanently from Survey Monkey website. After the researcher finishes analysis of the survey results, survey data are

removed from his personal computer and a copy of the data will stored in a CD for seven years before it is destroyed.

Validity and Reliability

Survey data collected by Survey Monkey are downloaded to Excel and imported into SPSS 14.0 for analysis. Prior to addressing the research questions and testing hypotheses posed for the study, preliminary analyses are conducted to display descriptive statistics and assess the psychometric properties of the instruments.

Construct validity deals with the validity and reliability of the survey measurements. Internal validity refers to the ability of a research instrument to "measure what is purported to measure" (Cooper & Schindler, 2006) while reliability "the degree that it supplies consistent results" (p. 321). Even though all measurement scales are adopted from prior research and have gone through extensive validation, their reliability and validity for this study are also measured and validated.

A principal factor analysis is conducted to confirm factorial validity of all constructs: job relevance, result demonstrability, perceived usefulness, and subjective norms. Items have to be loaded on distinct factors in order to be considered valid. Reliability is tested by calculating the value of Cronbach alpha. Cronbach alpha is a measure of internal consistency and reliability of a scale or a subscale. For an instrument to have an acceptable level of reliability, its alpha value must exceed the cutoff point of .70 (Nunnally, 1967).

IS researchers have long used Cronbach alpha and factor analysis for determining reliability and validity of survey instrument. In Newsted, Munro, and Huff's (1991)

analysis of 672 IS survey research articles in 35 different journals since 1970, one-third of all the studies examined instrument reliability. Of the specific reliability techniques, Cronbach alpha was the most common. In addition, 1% of all surveys had validity explicitly assessed and determined with factor analysis as the technique most commonly used.

Data Analysis

The study employs multiple regression technique for testing the hypotheses and answering the research questions. Multiple regression analysis is one of the most widely used statistical techniques to analyze the relationship between a single dependent variable and several independent variables (Seyoum, 2005). The variables with various degrees of significance resulting from the regression analysis are shown in order of importance based on the R^2 change and the resulting regression model (Norusis, 2006). This makes it possible to identify variables that are more significant than others in explaining correlation with usage behavior.

This method is used to maintain consistency with earlier TAM studies (Davis, 1989; Fang et al., 2005; Gefen & Straub, 2000; Moon and Kim, 2001; Venkatesh et al., 2003). In this study, multiple regression analysis is used to examine the proposed relationships in the research model. These include the correlations between system usage and the two independent variables, subjective norms and perceived usefulness, and between perceived usefulness and job relevance and result demonstrability.

Before making any meaningful conclusion from a multiple regression analysis, it is important that the data used have to meet the necessary assumptions (Norusis, 2006;

Schwab, 2007). The following assumptions for multiple regression analysis will be verified as part of hypothesis testing:

1. The observations are independent.
2. The distribution of each independent variable is normal.
3. The relationship between each independent variable and the dependent variable is linear.
4. For each combination of the values of the independent variables, the distribution of the dependent variable is normal with a constant variance.

Since survey responses are from distinct participants, the assumption of independent observations is met. A normal Q-Q plot of standardized residuals is used to graphically evaluate normality. In order to test the assumption of linear relationships between the independent and dependent variables, a scatter plot matrix of the independent variables and the dependent variable is drawn and examined. The relationships have to reach an accepted level of linearity before they are used in the multiple linear regression equation. A scatter plot of studentized residuals and predicted value is drawn to check the assumption of constant variance between the dependent variable and each of the independent variable.

Once the data prove to meet all the assumptions for multiple regression analysis, a regression model is run in SPSS 14.0. The value of R^2 indicates the extent variance in system usage is explained by the model. The ANOVA table presents the significance level of model with the effects of each independent variable entering the equation. The significance level must be less than .05 in order to reject a null hypothesis.

Potential Limitations of the Study Methodology

The principal limitation of the study is its limited generalizability of the results due to the nature of the sample. It is likely that the research results from a sample of IQCRM users represent limited potential for generalization to users of other CRM modules or systems. Besides, the participants to be included in the sample are from small businesses in mostly manufacturing industry. Caution is needed when generalizing the results to small organizations in other industries.

External validity can be threatened by participant errors typical of survey research (Cooper & Schindler, 2006). Participant errors affect the quality of responses under these three circumstances. The participant does not believe that the experience will be pleasant and satisfying. The participant does not believe that completing the survey is an important and worthwhile use of his/her time. The participant does not dismiss any mental concerns that he/she might have about participation.

In order to mitigate the issues of respondents' unfavorable perceptions of the survey, the researcher clearly communicates the purpose and significance of study to each participant in the cover letter. Special efforts are made to keep the survey short and save time for respondents. Guidelines from the literature regarding survey format and presentation are adopted to enhance the presentation and appeal of the survey.

Since the survey asks questions that relate a person's job function, it is quite likely that respondents may be concerned with the risk associated with replying to the survey. To alleviate this concern, the researcher includes specific statements in the cover page with the following assurances. First, the Internet survey form by Survey Monkey is hosted over a secure channel. All data transferred over the Internet is encrypted and

secure. Second, the survey will not collect any data identifying the respondents or their organizations. Third, all data will be reported in aggregate form. Finally, survey results are password protected at Survey Monkey.

In addition, non-response can pose a potential bias in survey research. To increase response rate, the researcher plans to send reminders to participants one week after the initial mailing date and another last reminder two days before closing the survey. Cooper and Schindler's (2006) review of the literature of various best practices used to boost response rate identified the use of reminders as the most practical and effective method.

CHAPTER 4. RESULTS

This chapter reports responses, data analysis, and study findings. The purpose of the study is to help IS and departmental managers in small businesses select and implement CRM solutions for their organizations that can lead to a desirable level of usage by focusing on the critical factors contributing to the employees' decision to use the technology. Specifically, the research helps managers determine whether job relevance, result demonstrability, perceived usefulness, and subjective norms significantly influence system utilization. Besides, the study also provides CRM software developers with information on the determination of factors driving end-users utilization of the system, which is valuable when designing or making modification to the software package.

Data Collection, Response Rates, and Population

Survey invitation was sent by e-mail to 807 members of IQMS-users Yahoo group. Members who were not current users of the IQMS customer relationship management module (IQCRM) were requested to either ignore the survey or to forward the e-mail to IQCRM users in their organizations. The survey was available to all participants from 9/27/07 to 10/11/07. During this period, 84 surveys were completed. Two of the responses were from users in companies with over 500 employees so they were excluded from analysis. This yielded a total valid response of 82 or 7.8% based on

an estimated population of 1,050. Since the survey design required participants to answers all questions before completing the survey, no response had missing data.

The survey responses were downloaded by the researcher to Excel and imported into SPSS 14.0 for analysis. The next sections present data coding, the demographic characteristics of the sample, descriptive statistics, validity and reliability analysis of the survey instrument, and hypothesis testing with multiple regression analysis.

Data Coding

Data coding is the process of assigning numbers or other symbols to answers so that responses can be grouped into limited number of categories. Categorization of data is necessary for efficient data analysis. The coding scheme used in the study is based on its appropriateness to the research problem and purpose.

Responses for survey items measuring perceived usefulness, subjective norms, job relevance, and result demonstrability are coded on a scale of 1 to 5 representing "Strongly Disagree" to "Strongly Agree". Responses for usage questions are combined into one item with a scale from 0 to 42 as in shown in Table 3. Demographic questions for company size, job title, current experience, and previous experience using a different CRM application do not need coding.

Table 3. Usage Questions Coding

Code	Length of Usage (Minutes)	Usage Frequency
0	0	Never
10	1-180	A few times a year
11	Over 180	A few times a year
20	1-180	Monthly
21	Over 180	Monthly
30	1-180	Weekly
31	Over 180	Weekly
40	1-120	Daily
41	120-180	Daily
42	Over 180	Daily
		Nearly all the time

Demographic Characteristics of the Sample

A majority (56.1%) of the respondents reports 1 to 3 years of experience using IQCRM and 59.8% reports no previous experience with a different CRM application. Half of the respondents are from organizations with 100 to 199 employees. The titles/job functions reported by the respondents are mostly customer service (47.6%), followed by sales (30.5%), and management (20.7%). Tables 4 to 7 show the detail presentation of the sample demographics of current experience with IQCRM, previous experience, organization size, and job functions.

Table 4. Experience with IQCRM Frequency Distribution

Experience	Frequency	Percent	Cumulative Percent
0 - 1 year	15	18.3	18.3
1 - 3 year	46	56.1	74.4
3 - 5 years	12	14.6	89.0
Over 5 years	9	11.0	100.0
Total	82	100.0	

Table 5. Previous Experience Frequency Distribution

Previous Experience	Frequency	Percent	Cumulative Percent
No	49	59.8	59.8
Yes	33	40.2	100.0
Total	82	100.0	

Table 6. Organization Size Frequency Distribution

Organization Size	Frequency	Percent	Cumulative Percent
1 – 99	9	11.0	11.0
100 – 199	41	50	61
200 – 299	25	30.5	91.5
300 – 500	7	8.5	100
Total	82	100.0	

Table 7. Titles/job Function Frequency Distribution

Title Job Function	Frequency	Percent	Cumulative Percent
Customer Service	39	47.6	47.6
Sales	25	30.5	78.1
Management	17	20.7	98.8
Other	1	1.2	100.0
Total	82	100.0	

Descriptive Statistics

The means and standard deviations are presented in Table 8. On a five-point Likert scale questions for perceived usefulness (PU), subjective norms (SN), job relevance (JR), and result demonstrability (RD), where 1 = "strongly disagree" to 5 = "strongly agree", the means range from 3.11 (Item 3 of result demonstrability, "The results of using the CRM application are apparent to me") to 4.09 (Item 2 of subjective norms, "In general, the organization has supported the use of the system"). Standard deviations range from .597 (Item 1 of subjective norms, "The senior management of the business has been helpful in the use of the system") to 1.016 (Item 3 of perceived usefulness, "Using the CRM program in my job would increase my productivity"). For usage questions, on a scale from 0 (no usage) to 42 (nearly all the time), the mean is 36.89, and the standard deviation is 6.41

Table 8. Means and Standard Deviations

Item	Minimum	Maximum	Mean	Std. Deviation
PU1	1	5	3.55	.918
PU2	1	5	3.37	.962
PU3	1	5	3.26	1.016
PU4	1	5	3.30	.990
PU5	1	5	3.3	1.015
PU6	1	5	3.3	.977
SN1	1	5	4.04	.597
SN2	2	5	4.09	.652
SN3	2	5	4.05	.627
JR1	1	5	3.41	.860
JR2	1	5	3.30	.898
RD1	2	5	3.4	.735
RD2	1	5	3.29	.868
RD3	2	5	3.11	.801
RD4	1	5	3.2	.881
Usage	10	42	36.89	6.412

Reliability Analysis

Reliability of a measurement is the degree it can supply consistent results. For this study, reliability is assessed by calculating the Cronbach alpha for each subscale. The Cronbach alpha measures internal consistency or the degree to which instrument items are homogeneous and reflect the same underlying constructs (Cooper & Schindler, 2006). The generally accepted Cronbach alpha is 0.70 or higher for social sciences (Nunally, 1967). Table 9 presents the results of reliability analysis of the scales used in the research model. All four scales have Cronbach alpha values above the cutoff point ranging from .762 for subjective norms to .966 for perceived usefulness.

Table 9. Reliability Analysis for the Extended TAM

Construct	Number of Items	Cronbach Alpha
Perceived Usefulness	6	.966
Subjective Norms	4	.774
Job Relevance	2	.904
Result Demonstrability	4	.919

Principal Component Analysis

A principal component analysis with varimax rotation is performed to assess the factorial validity of the construct measurements, in other words, whether the variables to be included in each of the regression models form distinct constructs. According to Schwab (2007), factor analysis requires that the data have to meet the following requirements:

1. The variables included must be ordinal, interval, or dichotomous nominal level.
2. The sample size must be greater than 50.
3. The ratio of cases to variables must be 5 to 1 or larger.
4. The correlation matrix for the variables must contain 2 or more correlations of 0.30 or greater.
5. Individual variable measure of sampling adequacy is 50 or higher.
6. The overall measure of sampling adequacy is 0.50 or higher.
7. The Bartlett's test of sphericity is statistically significant.

The first phase of a principal component analysis is to verify that these requirements are met. If they are not, factor analysis is inappropriate and its results are unreliable. Based on the survey results, the first three criteria are met since the variable measurements only included ordinal and interval levels, the sample size of 82 satisfies the minimum requirement of 50, and the ratio of cases to variables is 20.5 (sample size/4) to 1, which exceeds the requirement of 5 to 1. The next sections present the results of the correlation matrix, sample adequacy table, and Barlett's test of sphericity.

The correlation matrix is presented in Table 10. The matrix indicates that all variables have at least one correlation greater than |.30|, thus satisfying the requirement of substantial correlations among the variables.

Table 10. Correlation Matrix

	PU1	PU2	PU3	PU4	PU5	PU6	SN1	SN2	SN3	SN4	JR1	JR2	RD1	RD2	RD3	RD4
PU1	1.00															
PU2	.846	1.00														
PU3	.840	.875	1.00													
PU4	.778	.789	.805	1.00												
PU5	.839	.833	.834	.853	1.00											
PU6	.788	.786	.828	.821	.851	1.00										
SN1	.143	.084	.086	.148	.063	.150	1.00									
SN2	.127	.166	.172	.227	.203	.230	.721	1.00								
SN3	.146	.113	.096	.195	.190	.237	.457	.564	1.00							
SN4	.061	.039	.079	.202	.162	.242	.279	.356	.422	1.00						
JR1	.615	.590	.499	.531	.603	.553	.114	.289	.237	.035	1.00					
JR2	.648	.626	.590	.588	.601	.610	.186	.335	.280	.082	.825	1.00				
RD1	.346	.365	.389	.389	.413	.446	.191	.263	.279	.278	.377	.410	1.00			
RD2	.292	.343	.390	.427	.430	.432	.074	.217	.178	.264	.266	.328	.781	1.00		
RD3	.269	.380	.359	.471	.384	.382	.017	.171	.112	.195	.345	.330	.679	.717	1.00	
RD4	.263	.381	.385	.469	.347	.432	.127	.250	.251	.276	.364	.361	.755	.780	.739	1.00

Principal component analysis requires that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) be greater than 0.50 for each individual variable as well as the set of variables. As shown in Table 11, the measure of sampling adequacy ranges from .572 to .928 for the 16 variables. The overall MSA for the set of variable in Table 12 is .853. Therefore the requirement of sampling adequacy of the variables is met.

Table 11. Anti-image Correlation Matrices

	PU1	PU2	PU3	PU4	PU5	PU6	SN1	SN2	SN3	SN4	JR1	JR2	RD1	RD2	RD3	RD4
PU1	.898															
PU2	-.254	.928														
PU3	-.283	-.391	.903													
PU4	-.136	.028	-.079	.884												
PU5	-.169	-.216	-.088	-.451	.847											
PU6	-0.29	.000	-.258	-.157	-.280	.953										
SN1	-.304	.000	.123	-.144	.254	-.067	.572									
SN2	.341	-.024	-.169	.048	-.149	.085	-690	.660								
SN3	-.070	.038	.162	.029	-.087	-.062	-.042	-.293	829							
SN4	.002	.115	.091	-.065	-.044	-.181	.005	-.126	-.225	.844						
JR1	-.210	-.015	.282	.184	-.303	.001	.119	-.157	.055	.112	.773					
JR2	-.056	-.064	-.134	-.168	.263	-.081	.047	-.099	-.101	.030	-.683	.841				
RD1	-.111	.084	-.031	.300	-.135	-.044	-.185	.112	-.088	-.051	.003	-.102	.873			
RD2	-.040	.163	.013	.147	-.311	.015	.075	-.097	.111	-.002	.289	-.161	-329	.823		
RD3	.098	-.125	.066	-.272	.073	.087	.119	-.064	.103	-.007	-.115	.076	-.236	-.236	.897	
RD4	.208	-.184	-.104	-.327	.401	-.089	.016	.037	-.140	-.058	-.287	.180	-.304	-.437	-.186	.790

Table 12. KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.853
Bartlett's Test of Sphericity	Approx. Chi-Square	1136.953
	Df	120
	Sig.	.000

Table 12 also includes the measure of probability associated with Bartlett's test of sphericity. Principal component analysis requires that the probability associated with Bartlett's test of sphericity be less than the level of significance. The probability associated with the Bartlett's test is $p<0.001$, which satisfies this requirement.

The factor loadings from a principal component analysis with varimax rotation are displayed in Table 13. The results show that the four items load on three distinct constructs with a minimum value of .549, thus proving the factorial validity of the scales. Since job relevance loads on the same factor as perceived usefulness, these two scales are considered highly correlated. There can be a potential problem with multicollinearity if the two constructs serve as independent variables in a multiple regression analysis model. In that case, multicollinearity diagnostics output from SPSS will be verified to detect any possible problems with multicollinearity. Overall, the three components explain a total variance of 74.33% as shown in Table 14.

Table 13. Rotated Component Matrix

	Component		
Item	1	2	3
PU1	.926		
PU2	.908		
PU3	.893		
PU4	.841		
PU5	.899		
PU6	.853		
SN1			.829
SN2			.864
SN3			.774
SN4			.549
JR1	.698		
JR2	.733		
RD1		.823	
RD2		.881	
RD3		.842	
RD4		.867	

Table 14. Total Variance Explained

Component	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.50	46.8	7.50	46.85	46.85	6.02	37.61	37.61
2	2.45	15.32	2.45	15.32	62.17	3.34	20.88	58.50
3	1.95	12.16	1.95	12.16	74.33	2.54	15.84	74.33
4	.968	6.05						
5	.716	4.48						
6	.474	2.96						
7	.387	2.42						
8	.290	1.81						
9	.258	1.61						
10	.228	1.42						
11	.197	1.23						
12	.180	1.12						
13	.143	.90						
14	.111	.70						
15	.090	.56						
16	.064	.40						

Hypothesis Testing

Multiple regression analysis is used to test the four hypotheses posed in the study. This method has long been used by researchers since it is effective at analyzing the relationship between certain independent variables and one dependent variable. Two regression equations are needed to test the hypotheses.

1. H1o, H2o: Perceived Usefulness = a + b1x(Result Demonstrability) + b2x(Job Relevance)
2. H3o, H4o: Usage = a + b1x(Usefulness) + b2x(Subjective Norms)

In addition, the study also tests an overall model, which hypothesizes a direct relationship from result demonstrability and job relevance on usage instead of an indirect effect via their influence on usefulness. Thus the following regression equation is constructed and tested:

3. H1, H2, H3, H4: Usage = a + b1x(Result Demonstrability) + b2x(Job Relevance) + b3x(Usefulness) + b4x(Subjective Norms)

Since an important part of regression analysis is to ensure that all of its required assumptions are met, the following assumptions are examined before conducting the analysis:

1. The observations are independent.
2. The relationship between each independent variable and the dependent variable is linear.
3. For each combination of the values of the independent variables, the distribution of the dependent variable is normal with a constant variance (Norusis, 2006; Schwab, 2007).

The first assumption of independent observations is met for the regression models since the survey data are collected from distinct users of IQCRM. Each could only complete the survey once. There seems to be no relationship between the participants that could potentially affect the independent nature of responses.

First Regression Model

The first two hypotheses ask whether result demonstrability and job relevance are significant predictors of perceived usefulness as follows: H1o, H2o: Perceived Usefulness = a + b1x(Result Demonstrability) + b2x(Job Relevance). Perceived usefulness (PU) serves as the dependent variable with result demonstrability (RD) and job relevance (JR) as the independent or predictor variables. The next section checks the assumptions for this regression model.

The assumption of linearity is evaluated by plotting a scatter plot matrix of the independent variables and the dependent variable (Norusis, 2006). Since the last row of the graph in Figure 4 shows two cigar-shaped bands, it indicates that the relationships between the dependent variable and the independent variables are linear.

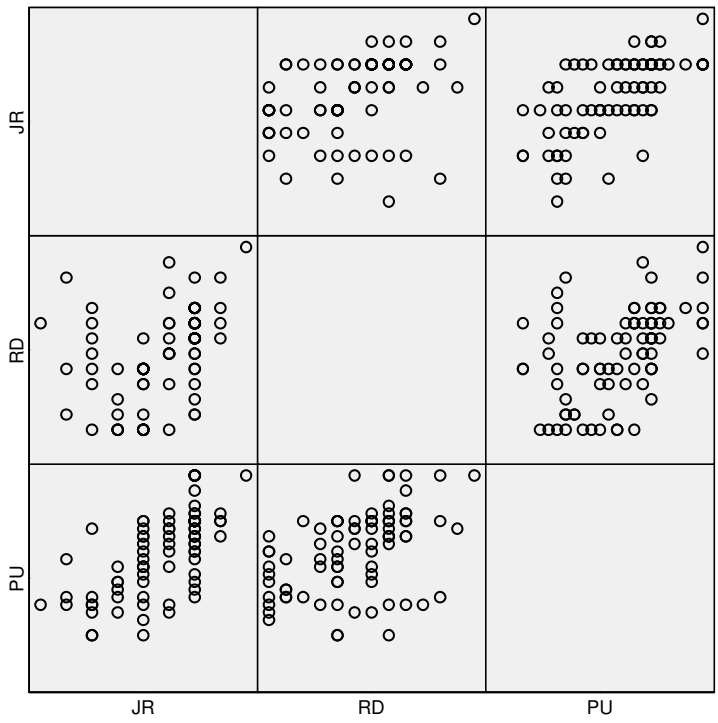


Figure 4. Scatter plot matrix of perceived usefulness, job relevance, and result demonstrability

If the assumption of normality for multiple regression analysis is met, the distribution of the standardized residuals should be approximately normal (Norusis, 2006). Figure 5 presents the Q-Q plot of the standardized residuals. Since the points fall more or less on a straight line, the assumption of normal distribution for each combination of the dependent variable and the independent variable is met.

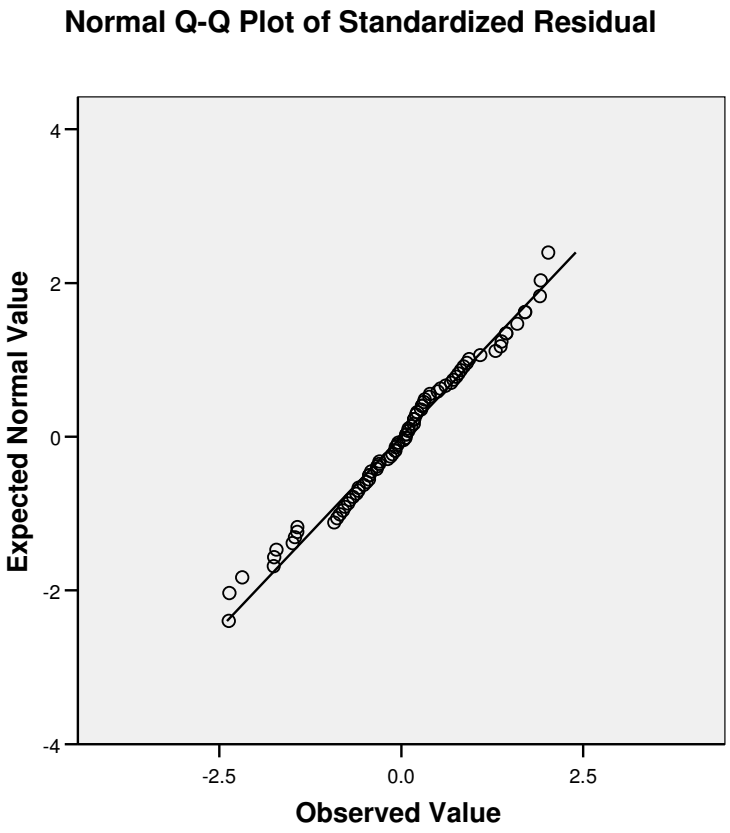


Figure 5. Normal Q-Q plot of standarized residual

To check whether the variance of the dependent variable is the same for all values of the independent variables, a scatter plot of the studentized residuals against the predicted values is drawn. If the variance is constant, the points should distribute equally on both side of the zero point (Norusis, 2006). As shown in Figure 6, the residuals appear to be randomly scattered around a horizontal line through 0.

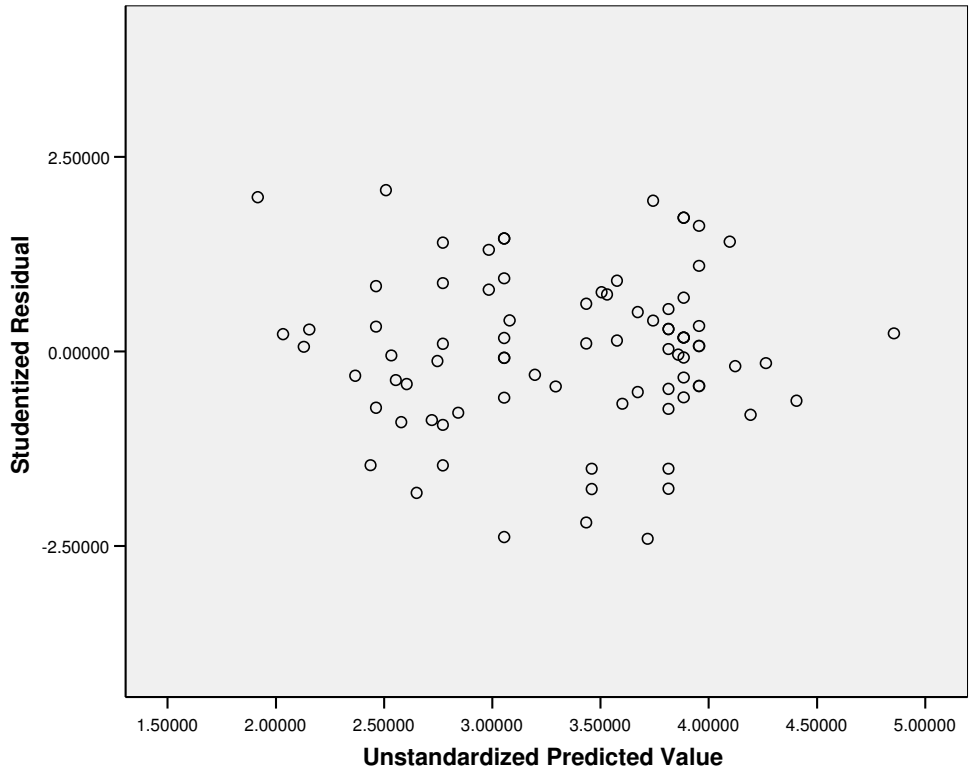


Figure 6. Scatter plot of studentized residual and unstandarized predicted value

A hierarchal regression analysis with probability of .05 or less is conducted to determine whether job relevance and result demonstrability of the IQCRM application are predictors of its perceived usefulness and thus test the first two corresponding hypotheses H1o and H2o. Regression results indicate that job relevance and result demonstrability are significant predictors of usefulness, explaining almost 49% of variability (R Squared = .488). Job relevance emerges as the main predictor, accounting for 44.3% of the variance (R Squared =. 443) with result demonstrability adding another 4.5% (R Squared =. 045). No outlier outside 2.5 standard deviations is detected.

Table 15. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.666(a)	.443	.436	.6799	.443	63.63	1	80	.000
2	.698(b)	.448	.475	.6562	.045	6.89	1	79	.010

Note. (a) = Predictors: JR, (b) = Predictors: JR, RD

With a significance level of p<. 005 in the ANOVA Table 16, the two null hypotheses H1o and H2o are rejected. Thus, the perception of usefulness of IQCRM is dependent on its job relevance and result demonstrability.

Table 16. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29.416	1	29.416	63.63	.000(a)
	Residual	36.984	80	.462		
	Total	66.400	81			
2	Regression	32.383	2	16.192	37.60	.000(b)
	Residual	34.017	79	.431		
	Total	66.400	81			

Note. (a) = Predictors: JR, (b) = Predictors: JR, RD

Researchers have warned against the effects of multicollinearity in multiple regression model (Norusis, 2006). Multicollinearity is the condition in which the independent variables are highly correlated. If it exists in a regression model, the independent variables are redundant with one another. In such a case, one independent

variable doesn't add any predictive value over another independent variable, but some degree of freedom is lost. As a result, it can weaken the analysis. Since the collinearity tolerance shown in Table 17 is .837, well above the .1 cutoff point, there indicates no potential problem with multicollinearity.

Table 17. Coefficients

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	Constant	.937	.311		3.009	.004		
	JR	.718	.090	.666	7.977	.000	1.000	1.000
2	Constant	.353	.374		.945	.347		
	JR	.617	.095	.572	6.505	.000	.837	1.194
	RD	.283	.108	.231	2.625	.010	.837	1.194

Second Regression Model

The last two hypotheses ask whether perceived usefulness and subjective norms from managers and peers are significant predictors of usage as follows: H3o, H4o: Usage = a + b1x(Perceived Usefulness) + b2x(Subjective Norms). Usage serves as the dependent variable with perceived usefulness and subjective norms as the independent variables. As shown in Figure 7 and 8, the assumptions of normality and constant variance for the regression model are met.

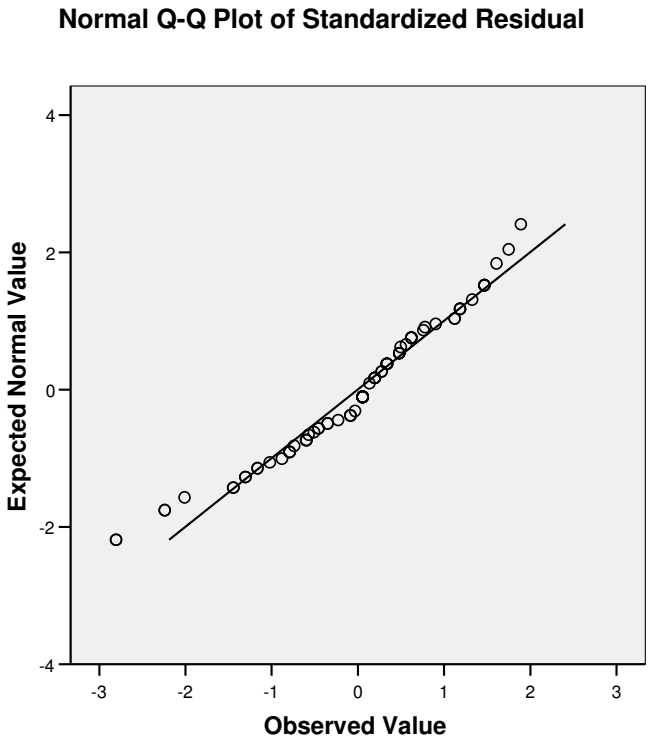


Figure 7. Normal Q-Q plot of standardized residual

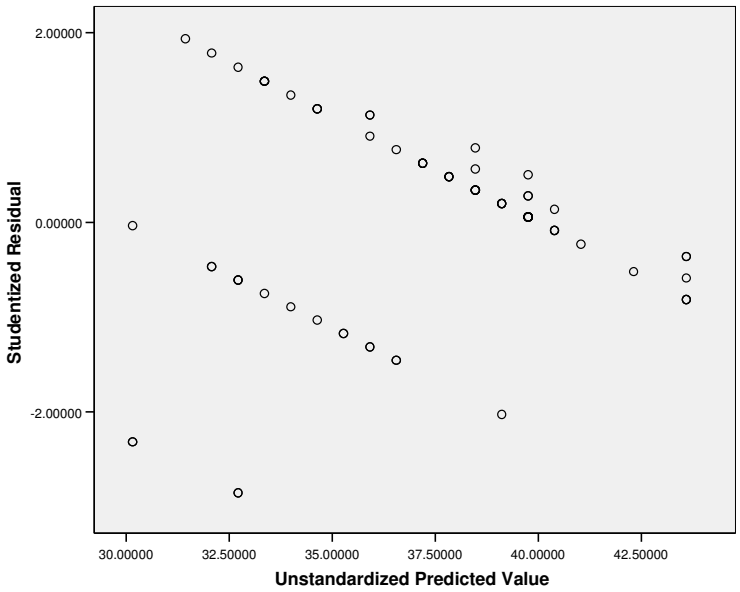


Figure 8. Scatter plot of studentized residual and unstandarized predicted value

Since the scatter plot matrix of usage, perceived usefulness, and subjective norms in Figure 9 does not indicate a clear linear relationship between subjective norms and usage, there may be a problem with nonlinearity. However, as a rule of thumb in regression, because the standard deviation of the dependent variable or usage (5.733) is more than the standard deviation of the residuals (4.504), nonlinearity is generally not a problem (Garson, 2007).

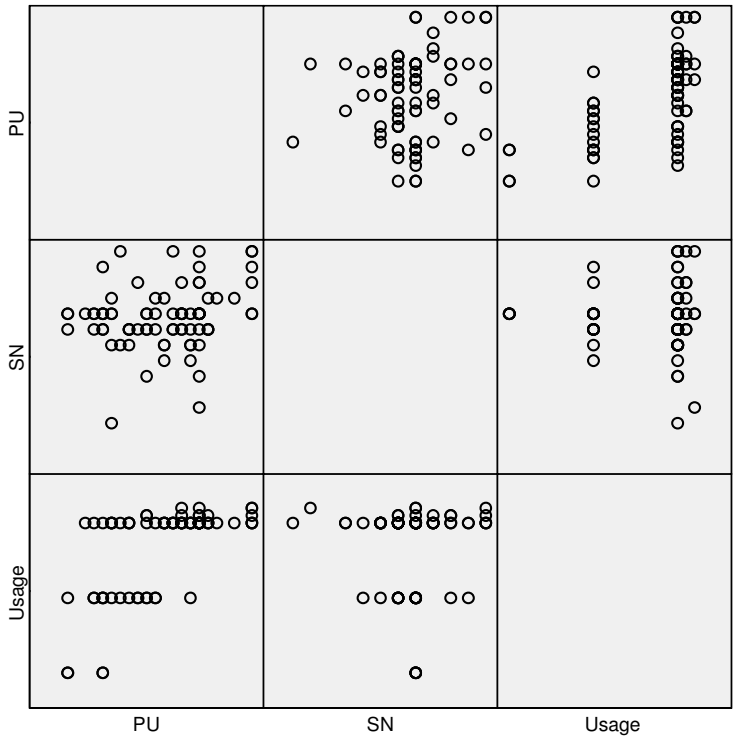


Figure 9. Scatter plot matrix of usage, perceived usefulness, and subjective norms

A hierarchal regression analysis with probability of .05 or less is conducted to determine whether perceived usefulness and subjective norms are predictors of usage of IQCRM and thus test the two corresponding hypotheses, H3o, and H4o. Regression results in Table 18 indicate that only perceived usefulness is a significant predictor of usage, explaining about 38% of variability (R Squared = .375). Subjective norms are

excluded from the model. The statistics in Table 18 are adjusted for removal of one outlier, case 82, which is outside 2.5 standard deviations. Original R Squared for perceived usefulness is .262.

Table 18. Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.613	.375	.367	4.532	.375	47.48	1	79	.000

Table 19. Variable Excluded from the Model

						Collinearity Statistics	
Model		Beta In	T	Sig.	Partial Correlation	Tolerance	VIF
1	SN	-.133	-1.467	.146	-.164	.955	1.047

Table 20. Casewise Diagnostics of Outliers

Case Number	Std. Residual	Usage	Predicted Value	Residual
82	-5.170	10	38.65	-28.652

Table 21. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	975.276	1	975.276	47.48	.000(a)
	Residual	1622.724	79	20.541		
	Total	2598.000	80			

Note. (a) = Predictors: JR

With a significance level of p<. 005 in the ANOVA Table 21, the null hypotheses H3o is rejected. Thus, usage of IQCRM is dependent on its usefulness. Since the subjective norms variable does not appear in the regression model, the null hypothesis cannot be rejected. There is not significant evidence to conclude that usage is dependent on subjective norms from managers and peers.

Third Regression Model

The third regression model serves an exploratory purpose, asking whether job relevance and result demonstrability can potentially be significant predictors of usage in addition to their direct effects on perceived usefulness. If these two variables are indeed determinants of usage, it is important to find out how much variability of usage they can explain on top of the variance explained by perceived usefulness. Since subjective norms were found to be non-significant in predicting usage, this variable is not included in the model. Therefore, the resulting regression model is as follows: Usage = a + b1x(Perceived Usefulness) + b2x(Job Relevance) + b3x(Result Demonstrability). Usage serves as the dependent variable with perceived usefulness, job relevance, and result demonstrability as the independent variables.

As shown in Figure 10 and 11, the assumptions of normality and constant variance for the regression model are met.

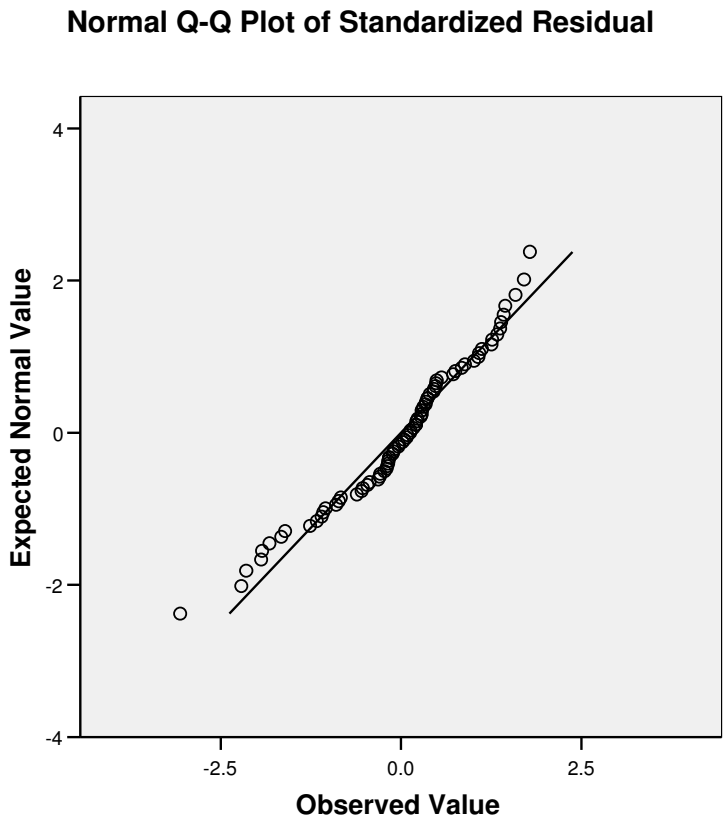


Figure 10. Normal Q-Q plot of standardized residual

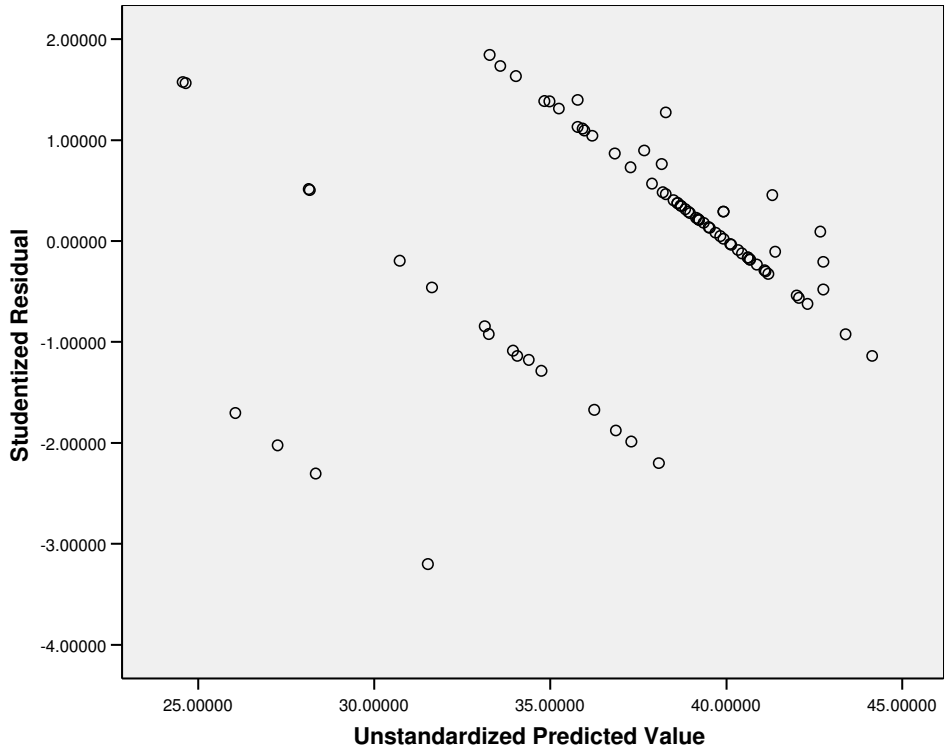


Figure 11. Scatter plot of studentized residual and unstandarized predicted value

Since the scatter plot matrix of usage, perceived usefulness, job relevance, and result demonstrability in Figure 12 does not indicate a clear linear relationship between result demonstrability and usage, there may be a problem with nonlinearity. However, because the standard deviation of the dependent variable or usage (5.733) is more than the standard deviation of the residuals (3.695), nonlinearity is generally not a problem (Garson, 2007).

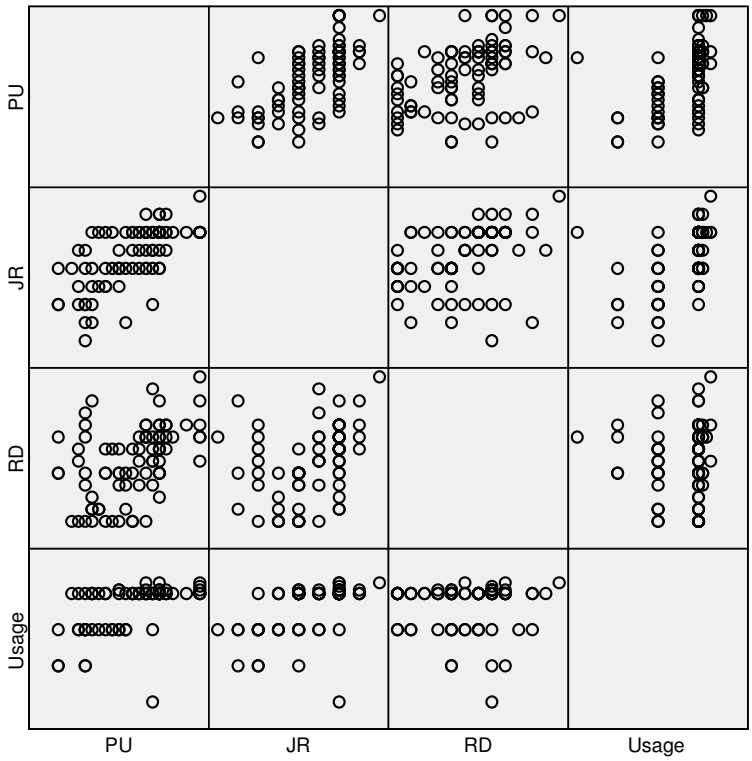


Figure 12. Scatter plot matrix of usage, perceived usefulness, job relevance, and result demonstrability

A hierarchal regression analysis with probability of .05 or less is conducted to determine whether perceived usefulness, job relevance, and result demonstrability are predictors of usage of IQCRM. Regression results in Table 22 and 23 indicate that all three variables are significant predictors of usage, explaining about 59% of variability (R Squared = .585). Job relevance emerges as the main predictor, accounting for 42.6% of variance, followed by perceived usefulness, and result demonstrability. The statistics in Table 22 and 23 are adjusted for removal of one outlier, case 82, which is outside 2.5 standard deviations. Original R Squared is .423

Table 22. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.653(a)	.426	.419	4.371	.426	58.663	1	79	.000
2	.697(b)	.485	.472	4.166	.059	8.963	1	78	.004
3	.765(c)	.585	.568	3.766	.099	18.425	1	77	.000

Note. (a) = Predictors: JR, (b) = Predictors: JR, RD, (c) = Predictors: JR, PU, RD

Table 23. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1120.549	1	1120.549	58.663	000(a)
	Residual	1509.007	79	19.101		
	Total	2629.556	80			
2	Regression	1276.080	1	638.040	36.770	000(b)
	Residual	1353.476	78	17.352		
	Total	2629.556	80			
2	Regression	1537.417	3	512.472	36.131	.000(c)
	Residual	1092.138	77	14.184		
	Total	66.400	80			

Note. (a) = Predictors: JR, (b) = Predictors: JR, RD, (c) = Predictors: JR, PU, RD

Table 24. Casewise Diagnostics of Outliers

Case Number	Std. Residual	Usage	Predicted Value	Residual
82	-5.776	10	38.81	-28.811

With the collinearity tolerance ranging from .514 to .773 as shown in Table 25, there indicates no potential problem with multicollinearity.

Table 25. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	Constant	22.361	2.005		11.154	.000		
	JR	4.445	.580	.653	7.659	.000	1.000	1.000
2	Constant	20.439	2.016		10.139	.000		
	JR	2.974	.740	.437	4.020	.004	.559	1.789
	PU	2.051	.685	.325	2.994	.000	.559	1.789
3	Constant	25.439	2.163		11.761	.000		
	JR	3.386	.676	.497	5.011	.000	.548	1.826
	PU	2.974	.646	.450	4.392	.000	.514	1.945
	RD	-2.776	.647	-.359	-4.292	.000	.773	1.294

Summary of Data Collection and Analysis

The goal of the study is to help IS and departmental managers in small businesses to select and implement CRM solutions for their organizations that can lead to a desirable level of usage by focusing on the critical factors contributing to the employees' decision to use the technology. Specifically, the research examines whether job relevance, result demonstrability are predictors of perceived usefulness, and whether perceived usefulness and subjective norms of system utilization and tests the following four hypotheses:

Hypothesis 1 (null): A user's perception of CRM technology usefulness is independent of its job relevance.

Hypothesis 2 (null): A user's perception of CRM technology usefulness is independent of its result demonstrability.

Hypothesis 3 (null): A user's utilization of CRM technology is independent of its perceived usefulness.

Hypothesis 4 (null): A user's utilization of CRM technology is independent of his/her managers' and peers' subjective norms.

H1o, H2o, and H3o were rejected by the data collected (n =82, p =. 005). There is not sufficient evidence to reject H4o. Consequently, the data indicate that a person's perception of IQCRM usefulness is dependent on its job relevance and result demonstrability and that usage of IQCRM is dependent on its perceived usefulness. In addition, job relevance, perceived usefulness, and result demonstrability are all found to be significant predictors of usage. Lastly, subjective norms exhibit a weak and non-significant impact on usage. Chapter 5 presents the discussions, implications, and conclusions of the study.

CHAPTER 5. DISCUSSIONS, IMPLICATIONS, AND CONCLUSIONS

This chapter discusses the results, provides recommendations for future research on CRM technology and related topics, and offers final conclusions. It is important to stress that all discussions and implications of study results need to be interpreted with the study assumptions and limitations presented in chapter 1.

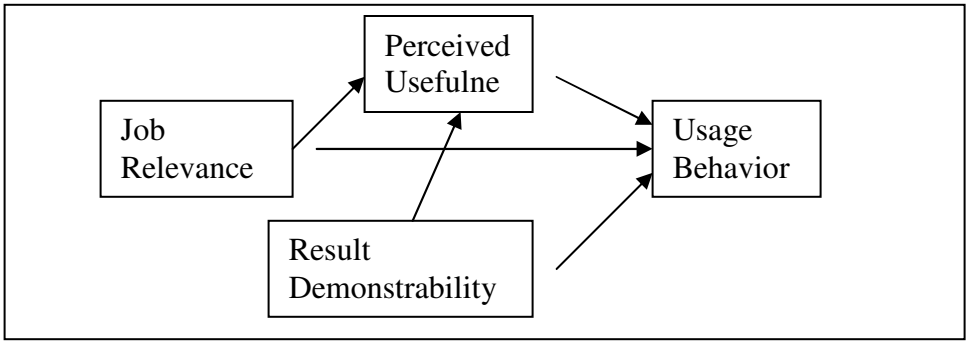
The purpose of this study is to identify factors that determine usage of IQMS customer relationship management (IQCRM) application or a general CRM technology in small businesses. Specifically, this study explores the extent to which perceptions of result demonstrability and job relevance of the CRM application influence its perceived usefulness, and the extent perceived usefulness and subjective norms determine current usage of the system. Therefore, the following research questions are raised. Is a user's perception of the CRM technology usefulness independent of its job relevance? Is a user's perception of CRM technology usefulness independent of its result demonstrability? Is a user's utilization of CRM technology independent of its perceived usefulness? And is a user's utilization of CRM technology independent of his/her managers' and peers' subjective norms?

The goal of the study is to help IT and departmental managers select and implement CRM software solutions for their organizations that can lead to appropriate levels of usage by focusing on the key factors contributing to the usage behavior of the employees particularly within the context of a small business. Good understanding and knowledge of how individuals use or reject a software package empower managers to

make effective decision on selecting a CRM technology most likely to be accepted by the users, diagnose problems with system usage, or devise appropriate interventions to increase system usage. Since usage is widely considered as a key measure of implementation success, achieving a sufficient level of usage is essential in reaping payoffs from IT investments.

Results

The results of the multiple regression analysis support three of the four hypotheses. Overall, the extended TAM explains about 59% of employees' usage of IQCRM. It is found that an individual's usage of the software is dependent on its job relevance, perceived usefulness, and result demonstrability but independent of the influence of her/his managers' and peers' subjective norms. Meanwhile, perceived usefulness of the software is also dependent on its result demonstrability and job relevance. These two variables explain about 49% of variance of usefulness of IQCRM. Figure 13 presents the revised extended TAM based on results of the study. Overall, the findings are within expectations since perceived usefulness, result demonstrability, and job relevance have increasingly become important constructs in IT usage literature. However, the weak effects of subjective norms on usage need further explanations.



Figured 13. The revised extended TAM

Implications of the Study

For the Researcher

The study adds to the literature an extended technology acceptance model for CRM technology implemented in small businesses. While TAM is a parsimonious and powerful model for explaining IT acceptance and/or usage, integrating it with other models adds to its strength. Collectively, the current research successfully incorporates several streams of research to synthesize an extended TAM for explaining usage of CRM software within the organizational context of small organizations. The extended TAM proves to be powerful at explaining usage, accounting for almost 59% of variance.

Since there is a dearth of research on CRM application usage conducted in small business environments, the current study serves as a good example for researchers interested in investigating usage of this particular technology or IT in general within the unique contexts of small organizations. Researchers should not be discouraged from studying IT phenomena in smaller organizations due to their limited IS staff or IT sophistication. Even though the identification of small organizations and the collection of

data from multiple organizations may seem more complicated than approaching several large organizations with hundreds of participants, conducting inquiry in small businesses is feasible and well worth the efforts.

The results of the study provide evidence that previous research on IT acceptance and usage in the literature applies to CRM technology in small organizations. Therefore, researchers can rely on existing knowledge on IT acceptance when studying usage of a new technology or within a new context. However, this does not imply that researchers should only replicate or validate existing knowledge and refrain from developing new theories that can further our understanding of usage across different technologies and environments.

Lastly, the non-significant effects of subjective norms on usage were not totally unexpected. In fact, the literature still reports mixed results on this construct (Agarwal & Prasad, 1997; Avlonitis & Panagopoulos, 2005; Davis et al., 1989; Moore & Benbasat, 1991). One possible explanation includes a typical situation where the organizations and the managers support usage of the CRM application but the employees' job functions do not require extensive use of the system. Another possibility is that subjective norms may be important in the initial system usage decision but then lose its impacts after a period of sustained or ongoing usage.

For the Practitioner

The recommendations proposed for the practitioners are based on the findings and conclusions of the study. The empirical evidence collected in the study attempts to identify the key factors that explain the usage of CRM technology in small businesses. It is recommended that organizations considering implementing this technology should give

serious attention to its job relevance, usefulness, and result demonstrability for the employees. Employees will more likely to use the system if it is relevant to or useful for their job function, or if it provides apparent results.

Opportunities abound for mangers to take advantage of the study findings to increase CRM application usage. Since the study indicates that job relevance is of profound importance in determining usage. It is suggested that organizations select a CRM system that fits the job requirements of the employees, or redesign their employees' work processes to fit the software. The results of a match between the capabilities of the technology and the demands of the task are expected not only to boost system usage but also to increase individual performance from using a CRM technology. As aptly stated by Goodhue & Thompson (1995), a technology will be used and will yield results if it is "a good fit with the task it supports" (p. 213).

Employees' perception of the software usefulness is another area that managers can positively influence through several different approaches. One mechanism for enhancing perceived usefulness is through training and communication. Amoako-Gyampah and Salam's (2004) study of ERP system acceptance found that training can positively influence the formation of beliefs regarding the usefulness of the system. Project communication can also play a critical role in shaping beliefs of usefulness by creating a shared understanding and belief among organizational participants about the benefits of the project. Beyond communicating to employees that the CRM application is useful, the notion of usefulness must be incorporated into the functionality and design of the system. Until a user is convinced, through actual experience with the system, that it is useful for her/his task, external information dissemination will not produce results

(Agarwal & Prasad, 1997). Therefore, investments in CRM technology should be focused on those systems that provide value to users as opposed to investments in technology for the hype of technology.

Another factor that exhibits a positive relationship to usage is result demonstrability. The study findings indicate that CRM technology usage is dependent on the employees' ability to recognize tangible results from using the system. This suggests that organizations should devise specific implementation strategies that directly link usage of the system with concrete measures and awards. Organizational interventions should focus on communicating information that emphasizes the tangibility of benefits of using the system. Examples of such interventions include training, seminars, newsletters, the use of opinion leaders, and public forums (Zmud, 1983). The more easily employees can relate usage to tangible results, the more likely they will use it.

The above three factors, job relevance, perceived usefulness, and result demonstrability also prove to be strongly related to one another. Almost 50% of variance in perceived usefulness is explained by job relevance and result demonstrability. Besides, job relevance and perceived usefulness load on the same factor in the rotated component matrix of principal component analysis. This implies that managers do not have to focus on all three factors simultaneously in boosting system usage. Positively influencing one or two of the three elements can potentially yield results.

In contrast with earlier studies that demonstrated a direct influence of subjective norms on IT acceptance and usage (Avlonitis & Panagopoulos, 2005; Moore & Benbasat, 1991), this study reports a non-significant impact of subjective norms on usage behavior. This does not imply that practitioners should discard the role of subjective norms on

system usage since there are mixed results in the literature on the effects of subject norms on IT usage. It is likely that subjective norms may play an important role in the initial acceptance and usage decision which requires an external mandate to modify behavior, but ongoing or sustained usage is determined by the users' evaluations of the technology, for example, its job relevance, usefulness, and result demonstrability (Agarwal & Prasad, 1997).

Perhaps the implication for practitioners that is likely to cover most of the findings in this study is to apply the concept of an "organic system" for the deployment of CRM technology where employees have to work out their own actions within a series of temporary "frameworks of decision" set by people around them (Burns & Stalker, 1961, p. 209). Subjective norms should not only come from management. All employees need to be committing to using the CRM application. Communication regarding its usefulness, result demonstrability, and job relevance needs to resemble "lateral consultation rather than vertical command" (p. 5). Several other relevant characteristics of the "organic system" proposed by Burns and Stalker (1961) for the management of innovation diffusion in organization include: (a) the adjustment and ongoing re-definition of individual tasks through interaction with others, (b) the flow of communication which consists of information and advices rather than instructions and decisions, and (c) the spread of commitment to the innovation project beyond any technical definition.

Recommendations for Future Research

Future research can examine on how the proposed model can apply to other CRM software packages in a different population of small businesses in order to validate

generalizability of the study results. For example, researchers can investigate system usage in small service companies or usage of a different CRM software package. Several popular CRM solutions for small companies include Salesnet, Goldmine, Salesforce.com, and SalesLogix.

Another related study effort is to conduct a similar survey on existing data set with different theoretical frameworks. Researchers can apply constructs or models other than those used in the current study to examine system usage and compare the explanatory power of different models in similar contexts. Moore and Benbasat's (1991) theory of IT innovation diffusion and Venkatesh et al.'s (2003) unified technology acceptance model are good alternatives for studying CRM technology usage.

Conversely, researchers can study CRM usage in small businesses using different research methods or approaches. For example, longitudinal surveys can measure system use over time and determine if certain determinants of usage sustain after some period of exposure to the system. Since researchers have pointed out that acceptance and sustained usage of information technology might represent two distinct constructs affected by different factors (Agarwal & Prasad, 1997), future researchers could conduct longitudinal studies of usage and examine the evolution from the initial acceptance of the system till its continued or ongoing usage. In addition, other research traditions beside the quantitative approaches are worth considering for studies of CRM technology usage. Qualitative research methods such as unstructured interviews or case studies can be conducted to seek in-depth knowledge of usage from select participants or organizations. Mixed methods methodology, which combines both quantitative and qualitative approaches, has the potential to yield new findings on determinants of system usage.

Lastly, the weak impact of subjective norms from managers and peers on CRM technology usage in small businesses deserves further attention. The role of managers in influencing employees' behavior is undeniable but the extent to which usage is explained by subjective norms still remains controversial. Future research investigating this facet of CRM or general IT usage can yield valuable insights.

Conclusions

This research investigates the determinants of CRM technology usage in small businesses. The specific research questions address the extent to which usage is predicted by perceived usefulness and subjective norms and the extent perceived usefulness by result demonstrability and job relevance. An extended TAM is created and serves as the theoretical framework for answering the research questions.

Data collected from a survey of 82 IQCRM users from various small manufacturing companies across mainly North America reveal that job relevance and result demonstrability explain almost 50% of variance in perceived usefulness of the CRM technology, and that job relevance, perceived usefulness, and result demonstrability together explain almost 60% of variance in system usage. No significant relationship is found between managers' and peers' subjective norms and usage of the CRM software.

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APPENDIX: COVER LETTER AND SURVEY INSTRUMENT

Cover Letter

Dear IQMS user group members,

Your help is needed. As part of an academic research to study factors that determine usage of a customer relationship management (CRM) application, could you please click on the secure Internet link below and complete the survey if you are a current user of the module?

https://www.surveymonkey.com/s.aspx?sm=zaWY_2bxlKjfYI1YdnQIoOSg_3d_3d

If you are currently not a user of the IQMS CRM module, could you please forward the e-mail to the CRM users in your organization?

All help is very much needed and greatly appreciated. The success of this study, potential benefits of the research to adopters of IQCRM, and the completion of the dissertation depend on your participation.

The survey is designed to take no more than 7 minutes and is completed by checking the box that best describes your answer to each question. It only collects general data about the CRM application and usage. Results will be reported in aggregate formats. All data gathered will be held in complete confidentiality by Survey Monkey and the researcher.

Even though I really appreciate your help, it is important to emphasize that your participation is completely voluntary and you can withdraw from the research without any consequence. The researcher fully abides by the relevant federal laws and Capella Institution policies for protecting participants' well-beings and preventing all foreseeable

harms from participating in academic research. Should you have any questions about the survey, please e-mail me at ….. or my mentor at ….

Thank you in advance for your consideration and participation in the research.

Sincerely

Thuan Pham

Ph.D. Candidate

Capella University

Survey Instrument

Page 1: Introduction

Dear participant,

Your response to the survey will help identify several key factors that determine usage of the a customer relationship management (CRM) application.

The survey will only take about 7 minutes to complete. I greatly appreciate your time and input. All personal data will be kept confidential for your protection as required by the relevant federal laws and Capella University mandates for academic research.

By clicking on the "Next" button, you agree to voluntarily participate in this academic research and acknowledge that you are over 18 years old.

Page 2: Survey Question

1. Please indicate how well you agree or disagree with the following statements regarding the customer relationship management (CRM) application usefulness:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Using the CRM program would enable me to accomplish tasks more quickly					
Using the CRM program would improve my job performance					
Using the CRM program in my job would increase my productivity					
Using the CRM program would enhance my effectiveness on the job					
Using the CRM program would make it easier to do my job					
I find the CRM program useful in my job					

2. Please indicate how well you agree or disagree with the following statements regarding the effects of subjective norms from managers and peers on using the CRM application

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The senior management of the business has been helpful in the use of the system					
In general, the organization has supported the use of the system					
My managers think I should use the CRM program					
My co-workers think I should use the CRM program					

3. Please indicate how well you agree or disagree with the following statements regarding the relevance of the CRM application in performing your job

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
In my job, usage of the CRM application is important					
In my job, usage of the CRM application is relevant					

4. Please indicate how well you agree or disagree with the following statements regarding the demonstrability or acknowledgement of results from using the CRM application.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have no difficulty in telling others the results of using the CRM application					
I believe I could communicate to others the consequences of using the CRM application					
The results of using the CRM application are apparent to me					
I would have no difficulty explaining why using the CRM application may or may not be beneficial					

5. During a typical day, how many minutes would you spend using the CRM application?

0
1 – 20
20 – 60
60 – 120
120 – 180
Over 180

6. How frequently do you access the CRM application?

Never
A few times a year
Monthly
Weekly
Daily
Nearly all the time

Page 3: Demographic Questions

7. What is the industry of the company?

Plastic Manufacturing
Metal Fabrication
Service
Other

8. How many employees work in your plant/facility?

1-99
100-199
200-299
300-500
Over 500

9. How many employees work in your company from all plant(s)?

1-99
100-199
200-299
300-500
Over 500

10. What is your primary job function?

Sales
Customer Service
Management
Other

11. How long have you used the current CRM application?

0 - 1 years
1 - 3 years
3 - 5 years
Over 5 years

12. Have you used a CRM application before?

Yes No

Answer