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The Relationship Between Customer Relationship Management Usage, Customer Satisfaction, and Revenue

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Walden University

College of Management and Technology

This is to certify that the doctoral study by

Robert Simmons

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2015

Abstract

The Relationship Between Customer Relationship Management Usage, Customer
Satisfaction, and Revenue

by

Robert L. Simmons

MS, California National University, 2010

BS, Excelsior College, 2003

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Business Administration

Walden University

September 2015

Abstract

Given that analysts expect companies to invest \$22 billion in Customer Relationship Management (CRM) systems by 2017, it is critical that leaders understand the impact of CRM on their bottom line. The purpose of this correlational study was to investigate potential relationships between the independent variables of customer satisfaction and CRM utilization on the dependent variable of business revenue. The service-profit chain formed the theoretical framework for this study. The study population included 203 service branches for an industrial equipment manufacturer in North America. The service director for the subject organization provided the data for the study via data extracts from the company's corporate database. Some branches were eliminated, leaving a total sample size of 178. The results of a multiple linear regression analysis showed that the proposed model could significantly predict branch revenue $F(2,175) = 37.321, p < .001, R^2 = .298$. Both CRM use and customer satisfaction were statistically significant, with CRM use ($beta = .488, p < .001$) showing a higher contribution than customer satisfaction ($beta = -.152, p = .021$). This study provides evidence to business executives that CRM use has a strong positive influence on revenue. Additionally, this study supports the findings of other studies that show a point of diminishing returns in improved customer satisfaction. This study contributes to positive social change by allowing firms to make better decisions with their investment dollars and by increasing CRM utilization through cause-related marketing.

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Dedication

The completion of this DBA doctoral study is the culmination of a life of learning, perseverance, and determination. I wish that I could take credit for all of this but that would be false. Primarily, I would never have made it through this journey without the strength, guidance, and mercy of my Lord. In addition to all he has done for me, he has blessed me with a wonderful family who has worked hard to make it possible for me to reach this goal.

I am dedicating this dissertation to my amazing wife of 32 years, Karen. Without her love and support, I would never make it out of bed in the morning. This accomplishment is more a testament to her love, devotion, and belief in me than anything I could have done on my own. When I was ready to give up, she pushed me forward. When I thought I could no longer go on, she helped me through. She is due any honor, title, or prestige that may come from this achievement.

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Many people deserve my thanks for helping me achieve this goal. First, I would like to thank my committee chair Dr. Ronald McFarland. Dr. McFarland has provided countless hours of honest and needed feedback to help me along this journey. He has worked diligently to help me get through this process as smoothly as possible. I would also like to thank my other committee members Dr. Alexandre Lazo and Dr. William Stokes. Both Dr. Lazo and Dr. Stokes have provided valuable feedback that helped me improve the quality of my work and ensured my study lived up to the rigid academic standards of Walden University.

I would also like to thank Dr. Freda Turner and all of the DBA program faculty and staff. I cannot forget the help from the staff at the writing center and the library. Walden has put together an incredible staff for this program. The staff at Walden gives every student the tools and encouragement they need to succeed. I would not have wanted to attempt this program of study at any other institution.

Lastly, I would like to thank my fellow students in every class and residency along the way. They were a constant source of encouragement and help. I can only hope that they would say the same about me.

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Section 1: Foundation of the Study

Business leaders realize that retaining profitable customers is essential to their organization's success (Herhausen & Schogel, 2013). In 2013, researchers estimated that 72% of business-to-consumer (B2C) companies listed retaining current customers as a top priority (Verhoef & Lemon, 2013). The widespread need for organizations to retain profitable customers is driving some of the current investment in business information systems. Information systems help companies collect data and manage customer relationships (Johnson, Clark, & Barczak, 2012; Oztaysi, Sezgin, & Ozok, 2011). In Europe, 46% of chief information officers (CIO) had immediate plans to invest in customer relationship management (CRM) systems (Verhoef & Lemon, 2013). Similarly, in the United States, 73% of big business have already invested in CRM systems or plan to do so in the near future (Verhoef & Lemon, 2013). The business demand for CRM systems has fueled significant growth in an already strong industry (Greenberg, 2010; Hassan & Parvez, 2013). However, many business leaders are questioning the need to invest in CRM due to the high failure rate of CRM installations (Roy, 2013). Gartner Group found that up to 70% of CRM installations showed no business benefits or generated a loss (Li & Mao, 2012).

Background of the Problem

In the current literature on CRM usage, scholars have provided a multitude of definitions for CRM systems. Most definitions focus on the technology portion of CRM, specifically the information system that house the data (Vella & Caruana, 2012). A full description of CRM should include the people and process that are part of any detailed

implementation (Ernst, Hoyer, Krafft, & Krieger, 2011). Using a blend of definitions from other research, Vella and Caruana (2012) defined CRM as the integration of people, systems, and processes to achieve customer satisfaction throughout the product life cycle. The failure of many companies to adopt this more holistic view of CRM may be a key reason that so many CRM implementations have failed to meet expectations (Maklan, Knox, & Peppard, 2011). An accurate definition alone is not enough to ensure the success of any system.

Much of the current research on CRM failures has focused on implementation strategies. Scholars have developed a variety of implementation approaches for CRM systems and found that no single implementation plan is always successful (Ahearne, Rapp, Mariadoss, & Ganesan, 2012). Ahearne et al. (2012) offered a contingency approach in order to provide the greatest opportunity for implementation success. Ahearne et al. explained that there is no single correct approach applicable to all organizations or situations. The concept of multiple successful strategies based on the organizational situation is the fundamental tenant of contingency theory.

Contingency theory alone does not fill all the gaps in the current research. Ahearne et al. (2012) called for further research to understand if CRM system usage has any effect on firm financial performance. Much of the current CRM research focuses on the costs of system implementation and does not address the ongoing costs or benefits of CRM system operation. Law, Ennew, and Mitussis (2013) identified a gap in the current research related to how CRM system operation may influence the financial performance of the firm.

Problem Statement

Global CRM Project revenue topped \$13 billion in 2012, and with failure rates approaching 80%, businesses lost nearly \$10.5 billion (Iriana, Buttle, & Ang, 2013; Sen & Sinha, 2011). Experts predict that losses will continue, potentially reaching \$22 billion by 2017 (Li & Mao, 2012; Maklan et al., 2011). The general business problem is that companies that invested heavily in CRM systems, such as Xerox, are not seeing the expected improvement in customer satisfaction, service growth, and return on investment (Ernst et al., 2011; Johnson et al., 2012; Josiassen, Assaf, & Cvelbar, 2014). The specific business problem is that some managers have limited knowledge of the relationship between CRM system usage, customer satisfaction, and the company's gross revenue (Coltman, Devinney, & Midgley, 2011; Garrido-Moreno & Padilla-Meléndez, 2011).

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between CRM system usage, customer satisfaction, and gross revenue. The independent variables were CRM system usage (X_1) and customer satisfaction (X_2). The dependent variable was gross revenue (Y). The targeted population included 203 service branches from an industrial equipment manufacturer in North America. This population was appropriate for this study because the target company provides a representative sample of industrial service firms in North America with a fully implemented CRM system.

The implications for positive social change include helping companies understand how to allocate their investment dollars. In addition, managers may use the results to

identify successful strategies to implement CRM systems or develop a method to justify future investment. In addition to justifying the cost of a CRM system, firms may save money by not investing in a CRM system if the cost exceeds the benefits. In either case, business leaders can use a portion of the savings for sustainability projects or in community development projects.

Nature of the Study

The main factors that affect a scholar's choice of research methods are the research question and data available (Fetters, Curry, & Creswell, 2013). The statistical methods used in this study helped to identify if CRM system use has any relationship to gross revenue. Researchers who use a quantitative method are attempting to accept or refute a hypothesis using standard statistical analysis (Bettany-Saltikov & Whittaker, 2013). Since I sought to understand relationships using numerical methods in this study, a qualitative approach was not appropriate. Similarly, a mixed method approach was not appropriate since the study used only numerical data. The data for this study are numerical in nature and lend themselves to a statistical analysis, which made a quantitative approach the most appropriate; for these reasons, I selected a quantitative method for this study.

A correlational design is appropriate to investigate relationships between the independent and dependent variables (Bettany-Saltikov & Whittaker, 2013). In a correlational design, the researcher is attempting to predict relationships and/or patterns between the chosen variables (Aussems, Boomsma, & Snijders, 2011). A correlational design was appropriate for this study since it was attempting to understand any

associations or relationships between the independent and dependent variables. Since there was no intention of controlling any of the independent variables, experimental and quasi-experimental designs were not appropriate for this study (Aussems et al., 2011).

Research Question

The research question is an essential element in determining the research method (Fetters et al., 2013). Scholars should write their research question in a clear and concise manner, purposefully worded to provide something other than a yes or no answer. In this study, the research question explored relationships between CRM system usage, customer satisfaction, and gross revenue. The central research question for this quantitative correlational study was the following: What is the relationship between CRM system usage, customer satisfaction, and gross revenue in the industrial service industry? The primary research questions resulted in the following subquestions:

- RQ-1: What is the relationship between CRM system usage and gross revenue in the industrial service industry?
- RQ-2: What is the relationship between customer satisfaction and gross revenue in the industrial service industry?

Hypotheses

In quantitative correlational studies, the scholar answers the research question through hypothesis testing (Bettany-Saltikov & Whittaker, 2013). Quantitative researchers use statistical methods to reach conclusions in their work (Fetters et al., 2013). In this study, I employed multiple regression analysis to test the following hypotheses:

H1_o: There is no relationship between CRM system usage and gross revenue in the industrial service industry.

H1_a: There is a relationship between CRM system usage and gross revenue in the industrial service industry.

H2_o: There is no relationship between customer satisfaction and gross revenue in the industrial service industry.

H2_a: There is a relationship between customer satisfaction and gross revenue in the industrial service industry.

Theoretical Framework

Although researchers have developed multiple frameworks to evaluate business performance within service industries, the service-profit chain has emerged as the most popular. Heskett, Jones, Loveman, Sasser, and Schlesinger (1994) developed the service-profit chain model and published it in their pioneering article in the Harvard Business Review. The service-profit chain was one of the first theories to integrate operations management concepts with human resource concepts in the service industry in an effort to explain organizational success (Yee, Yeung, & Cheng, 2011). The service-profit chain model establishes relationships between customer satisfaction, customer loyalty, employee satisfaction, and firm profitability (Pantouvakis & Bouranta, 2013). Previous studies have verified the validity of the service-profit chain. For example, Towler, Lezotte, and Burke (2011) confirmed that the service-profit model links the following: (a) concern for employees and concern for customers, (b) concern for customers and customer satisfaction, (c) customer satisfaction and customer retention, and (d) customer

retention to firm performance. In this study, I proposed an additional variable of CRM system usage in the service-profit chain. The intent of this study was to evaluate CRM operation as an additional influence in the service-profit chain.

Several researchers have attempted to develop a framework to assess CRM system performance. For example, Garrido-Moreno and Padilla-Melendez (2011) developed a model that linked key variables including customer orientation, CRM technology, CRM success, CRM experience, financial results, and marketing results. Garrido-Moreno and Padilla-Melendez (2011) used an extensive review of existing research to identify factors to use in their model and then used a survey of 311 Spanish hotel employees to understand which factors were most significant. However, Garrido-Moreno's and Padilla-Melendez's (2011) model is not sufficient for this study since it focused on knowledge management as the primary success factor and did not consider customer satisfaction as either a variable or result. Similarly, Hsieh, Rai, Petter, and Zhang (2012) developed a model that linked CRM user satisfaction to employee service quality and ultimately customer satisfaction. In another study, Wu and Lu (2012) developed a model to link CRM operation to relationship marketing and ultimately firm financial performance.

Operational Definitions

The following terms and phrases appear in this study. Readers who are unfamiliar with customer relationship management can use the definitions provided to clarify terms used in the study that are unclear. Additionally, the listing includes definitions for

common terms that may have different meanings in everyday use or could be confused with similar terms in other industries.

Analytical customer relationship management (aCRM): The process of evaluating a customer's data to expose behavior patterns in relation to purchases, including parts of the CRM system that focuses on the systematic collection, evaluation, and analysis of customer data (Gneiser, 2010; Ranjan & Bhatnagar, 2011; Tohidi & Jabbari, 2012). Analytic CRM includes technologies that store customer data and identify patterns such as satisfaction levels, support levels, and customer segmentation (Gulliver, Joshi, & Michell, 2013; Keramati, Mehrabi, & Mojir, 2010).

Collaborative customer relationship management: Collaborative CRM includes systems that ensure the communication, management, and synchronization of customer communications through specific distribution channels (Gneiser, 2010). Collaborative CRM technologies include items such as e-mail, phone systems, faxes, website, and forums (Keramati et al., 2010; Tohidi & Jabbari, 2012).

Customer lifetime value (CLV): A measure of the value of customer relationships, in terms of profitability, over the length of the relationship (Kim, Park, Dubinsky, & Chaiky, 2012). CLV uses the net present value technique to quantify the value of a customer. Managers calculate CLV by subtracting the direct costs of the customer relationship from the present value of expected benefits over the life of the relationship (Gneiser, 2010; Verhoef & Lemon, 2013).

Customer relationship management (CRM): Vella and Caruana (2012) defined CRM as the integration of people, systems, and processes to achieve customer

satisfaction throughout the product life cycle. CRM describes the strategic management of customer relationships using technological tools where appropriate (Frow, Payne, Wilkinson, & Young, 2011). The three main subcomponents of CRM are operational CRM, analytic CRM, and collaborative CRM (Tohidi & Jabbari, 2012).

Electronic customer relationship management (eCRM): Electronic CRM is simply CRM that includes the use of technology (Harrigan, Ramsey, & Ibbotson, 2012).

Global customer relationship management (GCRM): Kumar, Sunder, and Ramaseshan (2011) defined GCRM as the strategic application of CRM processes and tools across many customers in different countries.

Management CRM processes: The strategic activities that create business intelligence and improves decision making for resource allocation, service delivery, and product development (Keramati et al., 2010).

Operational customer relationship management (oCRM): Operational CRM includes applications and processes that support all areas of the business that are in direct contact with customers (Gneiser, 2010). Operational CRM technologies include applications that support marketing, sales, and customer service (Keramati et al., 2010).

Social customer relationship management (sCRM): CRM systems that makes use of blogs, forums, and other social media to broaden the focus of traditional CRM (Gneiser, 2010; Trainor, Andzulis, Rapp, & Agnihotri, 2014).

Value-based customer relationship management: Gneiser (2010) defined value based CRM as CRM that establishes a goal to build and manage a portfolio of customer relationships, which provide maximum value for the business.

Assumptions, Limitations, and Delimitations

Assumptions

Nenty (2009) defined assumptions in a study as something that is not testable but assumed to be true. For the purpose of this study, I assumed that the data provided by the subject company were correct and accurate. There are no means available to verify the accuracy of the data supplied. Since the data used are not public and only available from internal company records, there are no external means available to validate the data. Since the current North American Service Director for the subject equipment manufacturer provided the data at the start of the study and is a credible source, the risk of using erroneous data was minimal. Additionally, the service director was gathering data from existing company records. The use of existing data sources further minimized the risk of using inaccurate data.

The final assumptions relate to the mathematical requirements needed to use regression analysis. Since regression analysis is a statistical procedure, certain assumptions need to exist with the data for verification during data analysis. The statistical assumptions for the regression model include (a) linearity between the predictor and dependent variables, (b) no serial correlation, (c) homoscedasticity, and (d) normally distributed errors (Williams, Grajales, & Kurkiewicz, 2013).

Limitations

Limitations are conditions out of the researcher's control that provide bounds for the conclusions (Nenty, 2009). The inherent limits of using a single national organization for the study suggest that the results of this study are not necessarily transferable to other

groups or geographic locations. In addition, since a single division of the company uses the CRM system under study, the results may not be transferable to the other divisions within the same company. However, given the similarity of the equipment serviced by all divisions within the enterprise, it is likely that the results may be transferable to other divisions within the company and similar service companies within North America.

Delimitations

The purpose of imposing delimitations is to limit the scope of the study (Nenty, 2009). In order to complete data collection within the 1 year designated by the Walden University Institutional Review Board (IRB), I limited the scope of the study to the North American service branches of the subject company. Although this manufacturer has retail service branches globally, I excluded branches outside of North America from this study. Additionally, this manufacturer has at least three separate instances of CRM systems it uses across various business units. However, in this study I only focused on one of the three CRM installations. The basis for selection of the CRM system was longevity in use, data availability, and its frequent use by employees.

Significance of the Study

Contribution to Business Practice

Several businesses have benefited from investing in CRM systems. For example, Hassan and Parvez (2013) found that CRM systems have become a powerful marketing tool. Marketing leaders use CRM systems as a means to communicate with and retain existing customers. Similarly, the driving factor for CRM growth is that companies are finding it more profitable to retain existing customers rather than attract new ones

(Garrido-Moreno & Padilla-Meléndez, 2011). In addition to communicating with customers, CRM provides a means to enhance business relationships with existing customers. Many companies see CRM systems as a tool to help them add value to existing customers and improve customer satisfaction (Wu & Lu, 2012). However, companies do not see the benefits expected from expensive CRM projects (Maklan et al., 2011). Regardless of the many benefits CRM systems offer, business leaders are questioning their value.

Existing research on CRM does not clearly identify the benefits of CRM operation (Li & Mao, 2012). Additionally, there is little knowledge about the relationship between CRM and customer satisfaction (Sivaraks, Krairit, & Tang, 2011). Much of the research done on CRM systems has been in the retail goods or banking sectors. This study will add to the body of knowledge by describing the impact of CRM systems in the industrial service sector. The subject firm for this study manufactures and distributes industrial products. The focus of this study is the service branches for the target business in North America. Additionally, this research will add to the body of knowledge by determining the impact CRM has on customer satisfaction and firm financial performance for the target organization. The results of the study should be generalizable to similar North American industrial service organizations.

Implications for Social Change

Traditional business theory focuses on the economic aspects of business performance; however, the development of corporate social responsibility has highlighted the expanded role of companies in the global community. The public expects businesses

to embrace social change, clean up the environment, and improve economic conditions in their communities (Bondy, Moon, & Matten, 2012). The business case for corporate social responsibility demonstrates how a company's concern for social and environmental issues contributes to the organization's economic success (Bondy et al., 2012).

Businesses can reinvest gains from any commercial success they experience into additional social and environmental projects. This concept substantiates that positive social change occurs when a company's corporate social responsibility efforts contribute to its financial success.

This research helped to identify the economic benefits of CRM systems and this was the most significant finding of the study. The high cost of CRM implementations creates an expectation from business leaders to see a return on their investment. However, researchers have found that up to 22% of CRM systems fail to meet business leaders' expectations, and 20% damage customer relationships (Frow et al., 2011). Failure of a CRM system by any measure results in wasted time and money for business.

The direct investment spent on CRM systems is not the only downside for companies if implementations fail. Managers must also contend with the cost of lost opportunities. Money used to invest in CRM systems is not available for the business to use for other more lucrative projects. For example, a company could invest its funds, resources, and capital into other projects that theoretically would have produced a return. The potential loss to the business from a failed CRM system includes the direct project cost and the cost of not doing other income generating projects.

The results of this study contributed to positive social change by helping companies understand how to allocate their investment dollars. This study helped enable managers to identify successful strategies for CRM system implementation or to learn how to justify the expense of a CRM system. Companies can save money by ensuring their CRM system strategy will be successful or by choosing not to invest. In either case, companies can use any savings to invest in their local communities or other sustainability efforts.

A Review of the Professional and Academic Literature

The purpose of this study was to help business leaders understand what benefits CRM system usage can have on their bottom line. Most managers believe that CRM system use helps them serve their customers better, which leads to improved customer satisfaction. Terpstra, Kuijlen, and Sijtsma (2012) found that improved customer satisfaction leads to increased revenues. Many managers assume that merely using a CRM system leads to improved customer satisfaction and increased revenue. In this study, I hypothesized that the combination of CRM usage and customer satisfaction has a positive impact on revenue.

The following literature review contains 11 major sections that provide an extensive review of CRM. Table 1 contains a brief summary of the statistics relevant to the journal articles used in this study. The literature review begins with a detailed discussion of the service-profit chain. The next sections address CRM market growth, the emergence of CRM from other processes, and a brief history of CRM platforms. The next three sections shift focus to look at the benefits that CRM systems provide, some

examples of CRM failures, and several issues related to CRM system use. The discussion on CRM definitions reviews the many types of CRM systems in use today and provides a working definition for use in this study. In the discussion on CRM strategy, I provide a detailed review of how business leaders include CRM in their overall strategy and an example of a CRM value chain. The CRM value chain case presented in this discussion is a synthesis of the many articles on the topic. The literature review ends with two sections on CRM performance measures and criteria to measure CRM success.

Table 1

Summary Statistics for Research Articles Used in This Study

	Frequency	Percentage
Total references used that are 5 or less years old.	124	89%
Total references used that are peer reviewed.	133	96%
References used in the literature review.	100	76%
Total References	139	100%

Note. Article age refers to the number and percentage of articles that are less than 5 years old at the expected CAO approval date. I verified the peer review for each article using Ulrich's Periodicals Directory.

Service-Profit Chain

The service-profit chain has emerged as the primary theory to help managers understand how employee and customer satisfaction leads to improved business performance. Heskett et al. (1994) suggested the initial relationship later known as the service-profit chain in 1994 (Pantouvakis & Bouranta, 2013). Other scholars have

suggested modifications such as the relationship that links performance outcomes to employee satisfaction, customer satisfaction, and customer loyalty (Evanschitzky et al., 2012). Researchers have shown that higher levels of customer satisfaction lead to repeat business and improved margins (Oakley, 2012). The link between customer satisfaction and improved business performance is the most studied aspect of the service-profit chain. Additionally, studies show that satisfied customers result from interactions with happy, loyal, and productive employees (Pantouvakis & Bouranta, 2013).

The service-profit chain has three principal components including employee satisfaction, customer satisfaction, and business performance. Evanschitzky et al. (2012) proposed operational investments as another essential element. Companies invest heavily in CRM systems in an attempt to improve their operations. Although Evanschitzky et al. considered the effects of time lags, they failed to consider the use of operational investments as a variable in their research. The service profit chain, along with Evanschitzky's et al. modification provides the basis for this study with the addition of the variable used to consider the utilization of a CRM system. A more detailed discussion of employee satisfaction, customer satisfaction, and financial performance follows.

Employee satisfaction. Many managers think they already understand employee satisfaction. For example, traditional views of employee satisfaction consider constructs such as working conditions, compensation, and interpersonal relationships (Frey, Bayon, & Totzek, 2013). However, it is important for managers to consider infrastructure and training investments and the impact of these investments on employee satisfaction. Operational investments such as employee training programs or employee development

programs have also had positive effects on employee satisfaction (Evanschitzky et al., 2012). Evanschitzky, Groening, Mittal, and Wunderlich (2011) provided a simple definition of employee satisfaction as the overall assessment of the job by the employee. Regardless of the definition used, scholars have found a relationship between employee satisfaction and customer satisfaction. However, the impact of CRM operation on employee satisfaction is not apparent.

Researchers found CRM operation could have a positive or negative impact on employee satisfaction. Law et al. (2013) claimed that employee satisfaction was a primary outcome of CRM operation. Hsieh et al. (2012) concluded that the mandated use of CRM might have an adverse impact on employee satisfaction. The conflicting results in the literature reinforce the need for additional research on the overall effect of CRM operation on the service-profit chain.

Previous research has confirmed the link between employee satisfaction and customer satisfaction. Pantouvakis and Bouranta (2013) found that satisfied employees exhibit positive behaviors that lead to better customer service. Evanschitzky et al. (2011) found that employee satisfaction improves customer satisfaction and helps strengthen the effect customer satisfaction has on customer repurchase intentions. Improved customer repurchase intentions should lead to improved financial performance, but this is not necessarily the case. Some researchers found no link at all between employee satisfaction and financial performance (Evanschitzky et al., 2012). Customer satisfaction provides a crucial link between employee satisfaction and business performance.

Customer satisfaction. Managers believe they already have a good understanding of how customer satisfaction influences their business results. However, a full understanding requires more than a basic understanding of what influences customer perceptions. Scholars have defined customer satisfaction as a client's sense of contentment derived from their experience with a company as compared to their expectation prior to interacting with the business (Chougule, Khare, & Pattada, 2013). There are two separate conceptualizations of customer interactions in relation to customer satisfaction. Transaction-specific customer satisfaction refers to the impact of a single customer interaction on customer satisfaction (Chougule et al., 2013). Cumulative satisfaction is a summation of the customer's experiences with a company over time (Chougule et al., 2013). Managers should seek to understand both aspects of customer satisfaction. However, Pantouvakis and Bouranta (2013) found that service quality had a more considerable impact on cumulative customer satisfaction. The cumulative effect of a customer's experience with a company over many service events does more to influence their long-term perception of the enterprise.

Researchers have found substantial benefits to improved customer satisfaction. For example, higher levels of customer satisfaction lead to customer retention, more repeat business, increased gross margins, reduced acquisition costs, and improved long-term revenues (Oakley, 2012). Increased revenues and improved cash flows are the most significant business benefit of customer satisfaction documented in the academic literature (Williams & Naumann, 2011). Baumann, Elliott, and Burton (2012) found that satisfied customers are willing to pay a premium for a product or service. The existing

literature is clear that improved customer satisfaction results in improved financial performance of an organization. Scholars are still researching the impact CRM may have on customer satisfaction and business performance.

Many believe that CRM has a positive effect on performance. Business leaders believe that CRM systems can have a positive impact on customer satisfaction by enabling firms to customize offerings, increase the reliability of their products, and better manage the customer relationships (Ata & Toker, 2012). One could summarize the empirical research to suggest that CRM operation not only improves customer satisfaction but also increases revenue, reduces labor cost, reduces lead times, and improves quality (Ata & Toker, 2012). However, disagreement exists among scholars regarding the benefits of CRM operations.

There are conflicting results in much of the existing research concerning the impacts CRM operation have on customer satisfaction. There is still considerable debate among researchers on the actual benefits of CRM operation (Verhoef et al., 2010). Many factors other than CRM operation affect customer satisfaction and thus complicate the debate. For example, Chougule et al. (2013) found that product quality affects customer satisfaction by as much as 40%. Similarly, Azad and Darabi (2013) asserted that CRM operation did not have a notable influence on the quality of service, customer complaints, or improved revenues. It is hard to assess the impact of CRM on customer satisfaction. Regardless of the impact of CRM, the majority of the literature suggests that higher levels of customer satisfaction lead to improved financial performance (Steven, Dong, &

Dresner, 2012). The question of how CRM influences customer satisfaction, and overall business performance remains unanswered.

Financial performance. Business leaders have developed a variety of methods to assess performance. For example, managers in different functions use a variety of metrics such as market share, sales growth, customer acquisition, sales activity, and win-loss ratios to measure performance (Kumar et al., 2013). Some scholars believe that the use of only financial measures is insufficient to explain broader organizational performance. In an effort to provide a more comprehensive measure, Wu and Lu (2012) suggested a three-pronged approach to measuring firm performance that included financial measures, enterprise performance, a combination of financial and operational performance, and organizational performance. However, the approach suggested by Wu and Lu (2012) has failed to gain widespread use. Traditional financial measures such as revenue, net income, earnings per share, and profitability are still the most common methods of measuring business performance (Williams & Naumann, 2011). When CRM systems are in use for extended periods, customer lifetime value is the most popular performance measure (Tuzhilin, 2012). The customer lifetime value approach is gaining in popularity but is hard to implement.

The customer lifetime value approach appeals to marketers because it provides a strong indication of future performance. Some scholars have suggested that the best method of evaluating a firm's value is to sum the value of its existing and future customers (Verhoef et al., 2010). Researchers developed the concept of CLV to describe how to value customer relationships over the life of the firm. CLV is the sum of revenue

derived from a customer over their life with a firm minus the total cost of selling and servicing that customer (Fan & Ku, 2010). The final step in calculating CLV requires using the net present value method to account for the time value of money (Gneiser, 2010). CLV is a difficult metric for businesses to calculate because of the need to predict customers' future purchasing decisions (Fan & Ku, 2010). The complications in computing CLV have limited organizations' ability to implement it despite its popularity. The CLV method of calculating value is becoming more popular as companies are shifting their focus to profitable customers (Verhoef et al., 2010). CLV adds credence to the paradigm that it is more costly to acquire a new customer than to retain an existing one (Nguyen & Mutum, 2012). The implementation of information systems with embedded analytics helps companies overcome many of the difficulties in implementing CLV.

CRM Market Growth

The market for CRM systems has shifted significantly in the last 2 decades. In 2000, experts estimated the market for CRM systems between \$44 and \$50 billion annually with a growth rate of approximately 15%; however, the market took a downturn in the following years (Frow et al., 2011; Li & Mao, 2012; Maklan et al., 2011). Bull and Adam (2011) estimated the total U.S. market size in 2008 for CRM systems at \$13 billion. Some believe the decrease in market size was due to the global economic recession. However, it appears that the market stabilized in the following years. Padilla-Melendez and Garrido-Moreno (2013) reported the U.S. market size still at \$13 billion in 2012. Market growth projections for CRM systems globally have proven to be unreliable.

Experts estimated the CRM market would grow anywhere from 12% to 36% in 2012 (Greenberg, 2010). Regardless of the actual change in market conditions, researchers are not clear on what factors most affected the reduction in market size.

When CRM systems first came to market, many organizations believed that CRM would provide a competitive advantage. Companies have invested in CRM systems since the early 1990s to help them build stronger customer relationships and gain a competitive edge in their markets (Kim et al., 2012). However, many CRM projects have failed to meet the expected return on investment. For example, Yang (2012) found that 35% to 75% of CRM implementations failed to meet stakeholder expectations. Other scholars have found similar results with typical failure rates between 50% and 70% (Frow et al., 2011; Sundar, Murthy, & Yadapadithaya, 2012; Vella & Caruana, 2012). The high failure rate of CRM applications has caused business leaders to question the need to invest in these types of systems.

The Emergence of CRM

The emergence of CRM systems developed from the need for call center agents to handle multiple customer contacts. The first CRM systems surfaced in the latter part of the 1980s (Xu, Yen, Lin, & Chou, 2002). These early systems focused on the automation of basic customer facing activities such as capturing sales leads or automating scripts for customer service agents (Xu et al., 2002). Early CRM systems were transactional in nature and relatively unsophisticated in terms of features or connectivity. The emergence of the Internet in the mid-1990s significantly changed the CRM market. The Internet enabled a new level of connectivity in two major areas. First, the Internet allowed access

to a larger user base. Second, intranets, wide area networks, and the Internet allowed CRM systems to connect to a greater number of databases. CRM platforms based on Internet technologies created a new market known as eCRM (Milovic, 2012; Xu et al., 2002). The growth of eCRM platforms eventually lead to the demise of client/server based systems (Xu et al., 2002). Web-based eCRM platforms enable consumer's heretofore-unprecedented access to CRM platforms while on the go.

Consumers in the new Internet age require information availability while on the go. Consumers expect companies to have the same information available via the Internet on computers, tablets, mobile phones, and PDAs (Milovic, 2012). New eCRM technologies allow companies to interact with customers in ways they never could before. Electronic CRM systems provide companies with capabilities to reach customers that did not exist in the past (Milovic, 2012). The tools supplied by CRM and eCRM systems have enabled a new wave of relationship marketing.

CRM History

Many people believe that CRM began with the introduction of large-scale database technology. Although database technology undoubtedly enabled CRM growth, the origins of CRM started in the business disciplines of marketing, strategy, and supply chain management (Meadows & Dibb, 2012). More specifically, scholars can trace CRM roots back to relationship-based marketing. However, CRM also has strong ties to customer orientation and database management (Meadows & Dibb, 2012). In fact, early implementations of CRM focused almost exclusively on technology (Meadows & Dibb,

2012). The view of CRM as a technology only solution may be a key reason that many systems have failed.

Many companies lost their focus on the customer as they sought new technology. The initial connection to database technology caused many users to concentrate more on the technology rather than how to enable improved customer relationships (Frow et al., 2011). The technology focus of the first CRM efforts, coupled with companies' desire to succeed, led to significant investments in CRM platforms. Between the years of 2000 and 2005, companies spent a combined \$220 billion on CRM solutions (Maklan et al., 2011). Research suggests that this was not money well spent. Scholars have found that 22% of CRM systems implemented before 2008 have delivered disappointing results, and 20% even damaged customer relationships (Frow et al., 2011). The misguided focus on technology versus the balanced approach including people and processes may be a fundamental reason that CRM systems fail.

Timeline. The history of CRM systems starts in the field of marketing. Researchers traced the earliest origins of CRM systems to the field of relationship marketing and the works of Berry in 1983 (Gneiser, 2010). Yeager et al. (2011) argued that CRM started much earlier with the use of random digit dialing telephone surveys in the 1970s. The first telephone surveys bear little resemblance to the current definition of CRM. Abdullateef and Salleh (2013) found that the real growth of CRM started at the beginning of the 1990s with the introduction of sales automation applications and the expansion of call centers. Standard software applications, or platforms, sparked the real growth of the CRM market. The release of commercial hardware and software solutions

by vendors such as Siebel Systems fueled the growth seen in the late 1990s (Saarijarvi, Karjaluoto, & Kuusela, 2013). Commercial CRM systems came with prepackaged applications such as sales force automation and customer support. Prepackaged applications provided companies with system based best practices that drove improvements in the management of sales and customer service functions. With the implementation of commercial CRM applications, companies were able to collect vast amounts of data on their customer's preferences and buying habits.

With large amounts of newly obtained customer data, marketers quickly sought new ways to use the data for strategic advantage. The availability of large quantities of customer data spawned the idea of one-to-one marketing and mass customization in the early 1990s (Nguyen & Mutum, 2012). Companies quickly learned that collecting and acting on customer data could help them acquire and retain profitable customers (Nguyen & Mutum, 2012). This need generated a new branch of CRM known as analytic CRM. The promise of analytic CRM is that it can help convey the right offer to the right customers at the right time (Verhoef et al., 2010). Managers' use of analytic CRM enabled them to turn customer data into information they could use to find new customers or improve relationships with existing customers.

In the early to mid-2000s, a new generation of CRM began to emerge known as social CRM or CRM 2.0 (Greenberg, 2010). The emergence of popular social networks such as Facebook, MySpace, Twitter, and others helped develop new methods for companies to communicate and collect information from their customers. Researchers found that the adult use of social media grew from 8% in 2005 to over 35% in 2008

(Greenberg, 2010). The purpose of social CRM is to engage customers in collaborative conversations and improve customer relationships (Trainor et al., 2014). Social CRM expands the available data to CRM applications and allows marketers a new channel to communicate with customers more effectively.

Marketing. A strong relationship exists between CRM applications and the discipline of marketing. Schniederjans, Cao, and Gu (2012) suggested that the capability of CRM applications to profile customers is as important as product, price, promotion, and place, better known as the four Ps of marketing. Building and managing the customer relationship is essential to marketing. CRM technology enables companies to develop better marketing strategies and allows execution of targeted campaigns that are more efficient because of integrated customer data (Chang, Park, & Chaiky, 2010). Additionally, CRM technology enables companies to improve their marketing capabilities by allowing employees to achieve objectives faster and more thoroughly.

Traditional marketing management has focused on manufactured and packaged consumer products for mass distribution. However, the marketing trend changed in the early 2000s from a product-centered model to a customer-centered model (Xu et al., 2002). The customer-centered model forced companies to focus more on the services their customers desired rather than manufacturing products. The change in economies to a service base caused a similar shift to services marketing (Gummesson, 2002). Service marketing is similar to relationship marketing and focuses on the interaction between customers and suppliers (Gummesson, 2002). Additionally, services marketing stress the importance of personal relationships with customers and the importance of execution at

the point of the service encounter (Gummesson, 2002). CRM systems provided new methods for companies to improve their service marketing efforts.

Transaction marketing. Early marketing efforts focused on increasing the number of customer interactions or transactions. Transaction marketing refers to the traditional view of marketing where the focus was on individual transactions between buyers and sellers (Gneiser, 2010). Transactional marketing grew from the division and specialization of labor that resulted in a diverse collection of traded goods and services (Layton, 2011). Companies could grow their business by attracting additional customers for similar transactions. What began as simple transactions between individuals grew quickly into intricate patterns of trade involving entire communities, which spawned markets (Layton, 2011). Transaction marketing describes a similar set of buyers and a single or multiple sellers that engage in economic exchanges with limited knowledge (Layton, 2011). The concept of transaction marketing did little to improve customer relationships or improve customer loyalty. Relationship marketing has largely shifted the marketing paradigm of transaction marketing from a focus on customer acquisition and distinct transactions to long-term customer relationships with customized products (Gneiser, 2010). However, even without a shift to relationship marketing, CRM systems have several benefits in a transactional environment.

A significant advantage of CRM systems is its ability to improve the efficiency of service agents during customer interactions. CRM systems can increase independent transactions by reducing transaction times and improving payment methods (Xu et al., 2002). The advent of online and mobile devices allow customers to execute various

transactions on their own. Mobile devices, in particular, enable customers to carry out transactions at their convenience from virtually any location (Awasthi & Sangle, 2013). CRM systems have the added benefit of reducing transaction costs and improving the flow of information between the company and its suppliers (Xue, Ray, & Sambamurthy, 2013). Previous CRM researchers focused on reducing the cost of each customer interaction or transaction cost economics (Xue et al., 2013). However, the cost savings related to transaction economics fail to describe the full financial benefits of a CRM system.

Organizations need a more holistic description of the full financial impact of CRM system usage. Market logic tends to be the dominant theory in business research and focuses on the relationships that produce the greatest financial gain in any financial transaction (Bondy et al., 2012). However, even market logic fails to account for the full benefit from CRM use. CRM provides organizations with an alternative strategy that creates greater financial performance (Keramati et al., 2010). The resource-based view provides a framework to understand how CRM provides economic value (Keramati et al., 2010). The resource-based view has become the dominant methodology to describe economic value.

Resource-based view. Early researchers on the resource-based view attempted to understand competitive advantage. Scholars initially developed the resource-based view to help understand how companies can create and maintain a competitive advantage (Fan & Ku, 2010). However, companies cannot market resources; they must be able to convert resources into products or capabilities. The resource-based view suggests how efficiently

a firm converts resources into capabilities will determine its performance (Mohammed & Rashid, 2012; Trainor et al., 2014). Resources are tangible or intangible factors that a firm can use to achieve its objectives while capabilities are repeatable skills that a company uses to accomplish its operations (Chang et al., 2010). The resource-based view sees the company's resources as valuable and specific to the firm. In order to maintain a competitive advantage the company's resource must be unique, valuable, rare, difficult to imitate, and nonsubstitutable (Keramati et al., 2010). The resource-based view allowed companies to make the link between resources and strategic plans.

The resource-based view is the dominant theory in strategic management (Keramati et al., 2010). Business leaders use theories developed by the resource-based view to justify new investments. The resource-based view provides a theoretical basis that helps explain how information technology affords benefits to the organization over time (Shanks & Bekmamedova, 2012). The resource-based view allowed scholars to quantify aspects of human resources that were widely unaccounted for in prior theories.

Human resources are arguably the most important resource in any company. Proponents of the resource-based view believe that businesses can expand into other markets if they have unique, relevant, and unparalleled resources across a broad range of markets (Xue et al., 2013). Kim, Jeon, Jung, Lu, and Jones (2012) found that the firm's human resources are essential to achieving a competitive advantage. For example, Ahearne et al. (2012) saw that salespeople have dynamic capabilities that enable the company to react quickly to customer needs and, for this reason, they provide a competitive advantage.

The resource-based view provides the framework that ties human resources to technology resources that combine to provide a competitive advantage. Azad and Darabi (2013) defined CRM systems as infrastructural resources in line with the resource-based view. Wang (2013b) argued that CRM practices could provide rare, valuable, and difficult to imitate resources that could provide the company with a distinct competitive advantage. In order to maintain a competitive advantage, the company must not only guard core capabilities, but they must also protect critical resources and assets (Graf, Schlegelmilch, Mudambi, & Tallman, 2013). The resource-based view allows researchers to explain the relationship between people, processes, and technology that help CRM systems achieve success.

The resource-based view has proven particularly useful in explaining the financial outcomes of certain strategic investments. Researchers have applied the resource-based view to CRM in order to help explain the productivity paradox of information technology (Keramati et al., 2010). The productivity paradox refers to the problem company's face when they invest in information technology and see little to no improvement in firm performance (Keramati et al., 2010). Researchers see the resource-based view as the most appropriate method available to investigate the discrepancy between CRM investment and firm performance. The preference for the resource-based view is due to its close tie to marketing, information technology, and the previous application of the resource-based view to both disciplines (Keramati et al., 2010). Scholars can take advantage of previous research on the resource-based view and apply the learnings to current technology investments.

Relationship marketing. The goal of most CRM strategies is to increase a client's income, satisfaction, and the company's profit (Tohidi & Jabbari, 2012). CRM systems are one method companies use to improve customer relationships and in turn customer satisfaction and profits. CRM systems have three separate pieces. First, operational CRM includes the customer facing software (Tohidi & Jabbari, 2012). Second, analytical CRM stores customer information and provides reporting (Tohidi & Jabbari, 2012). Third, collaborative CRM includes communication tools with end users such as e-mail, telephone, and websites (Tohidi & Jabbari, 2012). These systems work together to provide the company with the information that brings value to the customer and improves customer relationships.

Creating value for customers is the first step in creating long-term and profitable relationships. Companies develop relationship-marketing strategies to retain high-value customers and maximize customer value (Ashley, Noble, Donthu, & Lemon, 2011). Researchers believe that firms can use relationship marketing to generate repeat purchases by encouraging customers to develop a psychological dependence on their firm (Chen & Chen, 2013). CRM systems are a critical component of many businesses' relationship marketing efforts. Numerous companies use CRM systems to improve their relationship marketing efforts (Chen & Chen, 2013). Academics use the terms CRM and relationship marketing interchangeably due to their interconnected history (Shafia, Mazdeh, Vahedi, & Pournader, 2011). However, CRM and relationship marketing are not the same.

Relationship marketing is a recent phenomenon in the business world. However, scholars agree that CRM developed from relationship marketing (Ata & Toker, 2012). Relationship marketing, unlike transaction marketing, focuses on developing and maintaining continuous and profitable relationships with customers (Ata & Toker, 2012; Johnson et al., 2012; Sen & Sinha, 2011). Relationship marketing changes the focus of marketing away from products and focuses it squarely on customer relationships (Wang X. L., 2012). Scholars identified developing relationships with new customers as a primary goal of relationship marketing. Companies who engage in relationship marketing develop relationships with clients based on quality, dialog, innovation, and learning (Johnson et al., 2012; Nguyen & Mutum, 2012). However, Su et al. (2010) argued that the foundation of relationship marketing is trust. Before companies can gain a customer's loyalty, they must first gain their trust.

Many of the marketing methods in common use today are a result of relationship marketing and CRM. For example, marketing campaigns such as loyalty card programs, company credit cards, personalized offers, email lists, and discount offers had their beginnings in certain elements of relationship marketing (Ashley et al., 2011). Some scholars describe CRM as relationship marketing targeted at the individual customer's needs (Yang, 2012). CRM platforms provide the information that enables many of the now common marketing campaigns. The phrase information-enabled relationship marketing describes how CRM provides an additional source of value creation and a new growth enabler (Sundar et al., 2012). CRM systems are a primary component of information-enabled relationship marketing.

Base of the pyramid. Relationship marketing has emerged as a key strategy for organizations creating products targeted at the world's poorest inhabitants at the base of the pyramid. The base of the pyramid refers to the more than 4 billion consumers whose annual income is less than \$1,500 U.S. annually (Chikweche & Fletcher, 2013). Some of the world's poorest people make up the population at the base of the pyramid. The majority of people at the base of the pyramid live in countries such as Sub-Saharan Africa, South Asia, East Asia, and certain countries in Latin America (Chikweche & Fletcher, 2013). Previous marketing strategies have largely ignored populations in poorer countries. Schrader, Freimann, and Seuring (2012) found that much of the research on markets at the base of the pyramid focused on corporate social responsibility. However, recently scholars believe that consumers at the base of the pyramid rely more on social networks and have unique needs from a supply chain perspective (Schrader et al., 2012). The type of communication in markets with lower income participants makes them strong candidates for relationship marketing strategies and CRM technologies.

Communication at the base of the pyramid is largely via person-to-person interaction. The person-to-person connections provide a significant opportunity for organizations to use social networks to enhance their marketing efforts. Social networks are an important communication process at the bottom of the pyramid (Chikweche & Fletcher, 2013). Social exchange theory may provide a link between social networks and successful marketing strategies at the base of the pyramid. Social exchange theory describes how actors in a relationship make investments in the relationship that constitutes a commitment to the other party (Roy, 2013). The primary tenant of social

exchange theory is to prove oneself trustworthy and hope the other party reciprocates. Social exchange theory matches the underlying premise of relationship marketing that is to develop mutually beneficial relationships between a company and its customers (Roy & Eshghi, 2013). Trust is a fundamental requirement when marketing products at the base of the pyramid.

Roy and Eshghi (2013) found that the best relationship marketing strategy was one of customer advocacy. Companies can build more trust and loyalty from customers by keeping the customer's best interest in mind. Roy (2013) found the market mechanisms to optimize customer advocacy was the company's focus on customer success, increasing customer involvement, development of knowledge sharing partnerships, and full transparency with customers. A robust CRM strategy provides a means to achieve the goals laid out by a customer advocacy approach. CRM systems can provide significant benefits to firms that target the base of the pyramid, particularly if they include Social CRM.

CRM technology. Many view CRM solutions as a purely technical endeavor. For the purpose of this study, CRM technology refers to the technical, or information technology-based solutions that improve communication and information exchange between the company and its customers (Ernst et al., 2011). Scholars should highlight the significant differences between the technology used in CRM and the people and processes that make up the entire CRM concept. The technology portion of a CRM system consists of three fundamental parts (Keramati et al., 2010). The first part includes technologies that allow two-way communication between the company and its customers.

The second part includes technologies that facilitate efficient internal operations between different functions such as sales, operations, and customer service. The third part includes technologies that provide the business with the ability to analyze data and make decisions based on the analysis. All parts of a CRM system fit the overall system classification of business intelligence systems. Business intelligence is the set of skills a company needs to extract useful data from storehouses that provide insightful information on customer needs (Malthouse, Haenlein, Skiera, Wege, & Zhang, 2013). Modern business intelligence systems are blurring the lines between what used to be clear product architectures such as ERP, CRM, and communications systems.

Business intelligence systems focus heavily on integration and are mostly concerned with presenting information to decision makers. Business intelligence systems provide decision makers with the right data at the appropriate time and in a format that allows them to make the best decisions (Hou, 2012). Business intelligence technologies provide the basis for CRM systems, which then allow a customer-focused strategy (Alshawi, Missi, & Irani, 2011). In some installations, business intelligence systems provide the linkage to stand-alone systems that allow integration of data sources. Industry experts classify business intelligence systems as part of the family of Enterprise Information and Communication Technologies (Alshawi et al., 2011). One example of the use of business intelligence systems to enhance customer relationships via CRM is the mining of data on customer complaints. If employees can analyze customer complaints to gain more knowledge about customers, they can provide valuable business

intelligence for the organization (Galitsky & De La Rosa, 2011). Business intelligence systems rely heavily on networking technologies.

Networking technologies enable communication between critical parts of the enterprise infrastructure including CRM systems. The use of the Internet, intranet, and extranet communications allows companies to carry out business-to-business, business-to-consumer, and consumer-to-consumer e-commerce (Lee, Huang, Barnes, & Kao, 2010). E-commerce provides companies with a direct link to their customers regardless of their location. The growth of networking technologies, specifically Internet technologies, has enabled companies to use CRM systems to integrate supply chains and improve customer relationships (Lee et al., 2010). The growth of CRM and other technology solutions would not be possible without networking technologies.

Not all CRM systems are the same. CRM vendors have developed alternative technological solutions to achieve their unique version of CRM solutions (Awasthi & Sangle, 2012). A typical CRM solution includes the software, hardware, and services required to support typical front office functions such as sales or service (Iriana et al., 2013). CRM technology can refer to any information technology resource used to support the collection, analysis, or integration of customer data (Chang et al., 2010). CRM systems can include various technological components such as software applications, databases, data warehouses, networking systems, and communication systems. Each CRM vendor has developed different ways to connect and use many of the standard CRM components to deliver a unique solution to their customers.

One of the major advantages of CRM technology is its ability to integrate key functions of the business. For example, CRM technology can integrate the customer service function into a single information system (Reddick, 2011). CRM technology can integrate all of the company's marketing efforts and automate certain aspects of the company's relationship with its customers (Harrigan et al., 2012). Chang et al. (2010) found that marketing capability provided the link between the use of CRM technology by the firm and an improvement in the company's performance. Organizations can use networking technologies to extend their CRM application to key suppliers and customers. Broad integration allows the benefits of CRM to extend to the entire supply chain.

Many parts of CRM share common characteristics and technologies with other applications. Industry definitions show some similarity between analytical CRM, knowledge management, and data mining systems (Ranjan & Bhatnagar, 2011). However, the recent research on knowledge management is the most applicable to CRM. Researchers have shown that knowledge management systems help firms achieve their desired return on investment from business intelligence systems (Ranjan & Bhatnagar, 2011). An extrapolation of this argument shows that CRM systems should provide the same benefits. The entire information technology infrastructure to support a CRM system could include the integration of knowledge management, decisions support systems, artificial intelligence, and data warehousing (Ranjan & Bhatnagar, 2011). Organizations must develop a long-term information technology strategy and consider the variety of applications needed to ensure they do not duplicate efforts by implementing multiple different systems with similar capabilities.

Knowledge management. Like CRM, most see knowledge management as a technology-based solution. However, to implement a successful knowledge management system, organizations must take a much more fundamental approach to the issue of learning. People gain knowledge through the collection of data that they organize, manage, and share (Gulliver et al., 2013). A broad definition of knowledge management is a process that allows the creation of organizational learning in a way that generates value and enhances the company's competitive advantage (Gulliver et al., 2013). Organizations that seek to employ knowledge management should first understand their organizational learning model and then find a knowledge management solution that complements their company's culture. Knowledge management provides companies with a method to capture, manage, and transmit real-time data on products and customers in order to improve the organizational response to critical decisions and improve the company's competitive advantage (Lopez-Nicolas & Merono-Cerdan, 2011; Tseng, 2011). Creating customer value is one of the preeminent goals of knowledge management (Fan & Ku, 2010). The primary goal of organizations that use knowledge management is to transmit knowledge to points in the business where they can then use it to create customer value.

The collection and use of customer data provide an essential link between knowledge management and CRM. Garrido-Moreno and Padilla-Meléndez (2011) provided a definition that describes the relationship as the ability to capture, manage, and share customer information in order to improve customer response and decision-making. Researchers have found knowledge management to be a critical success factor for CRM

systems (Garrido-Moreno & Padilla-Meléndez, 2011). However, knowledge management capabilities alone will not guarantee CRM success (Manesh & Hozouri, 2013).

Organizational learning provides the bridge that links knowledge management principles to CRM success (Hassani, Aghaalkhani, Hassanabadi, & Rad, 2013). Organizations must not only collect data but they must also find ways to disseminate data as information to all parts of the organization that needs it.

Knowledge management and CRM are not just knowledge sharing platforms. As a strategy, knowledge management can help an organization improve organizational efficiency (Lee et al., 2010). Organizational improvements come from the sharing of information as companies collect internal and external information and then share this information to improve its services (Lee et al., 2010). Managing information allows companies to increase their success by improving customer relationships, which then has a positive impact on organizational performance (Mohammed & Rashid, 2012). The sharing of information to improve efficiencies results in real cost savings.

Integrated knowledge management (IKM) is another significant development in the use of knowledge management principles related to CRM systems. IKM describes the process of collecting and sharing customer-related data for selective use in the customer facing areas of the business (Bull & Adam, 2011). Scholars have identified multiple benefits of sharing knowledge throughout the organization such as improved internal efficiency, closer customer relationships, better strategic planning, improved response to market changes, better decision-making, and improved supply chain management processes (Fan & Ku, 2010). However, scholars still do not fully understand the

relationship between knowledge management and CRM. The relationship between knowledge management and CRM profitability requires additional research (Fan & Ku, 2010).

Ranjan and Bhatnagar (2011) found that knowledge management was an important factor to achieve a positive return on investment for organizations that invested in business intelligence systems. Companies need the tools necessary to transform data into knowledge that is usable by the enterprise. Analytical CRM, business intelligence systems, and knowledge management systems are all part of the same family of information systems and help organizations transform data into knowledge. The information technology platforms that make up business intelligence systems include operational data warehouses, data analysis tools, knowledge/data warehouse, and knowledge management applications (Ranjan & Bhatnagar, 2011). Some researchers consider CRM and knowledge management to be parts of a larger system. For example, Wang (2013b) saw CRM as a multidimensional construct that included key customer focus, CRM organization, technology-based CRM, and knowledge management. Organizations must take a broader view of the technology infrastructure to ensure they can maximize the benefit of technology investments.

CRM providers. CRM systems are not new to the market but emerged after the widespread use of ERP systems. The first CRM systems appeared in the late 1980s (Xu et al., 2002). Managers used the first CRM systems to automate processes that acquire service and keep customers. Many of the original software companies that provided CRM packages merged with other enterprises. In some cases, larger companies ultimately

acquired their competitors. For example, Nortel Networks purchased Clarify while PeopleSoft acquired Vantive (Xu et al., 2002). Mergers and acquisitions account for the competitive landscape in the CRM market today with mostly a few large players.

Oracle quickly positioned themselves as a leader in CRM systems. Siebel Systems, later acquired by Oracle, released their first CRM solution in the early 1990s (Saarijarvi et al., 2013). Oracle took advantage of their Siebel acquisition and began merging Siebel's CRM platform with their own products. Oracle achieved a significant step in CRM system development in 1999 when it integrated its back-end ERP systems with the front-office CRM applications (Xu et al., 2002). Siebel Systems is still one of the central players in the global CRM market along with SAP, Salesforce.com, Microsoft, and Teradata (Tuzhilin, 2012).

Most of the current development work on CRM applications centers on the integration of social media platforms. Social media integration expands the available dataset to a CRM system exponentially. Big public data sources, such as Facebook and LinkedIn, provide a rich dataset to supplement data that companies already have in their CRM system (Greenberg, 2010). Applications such as Helpstream for customer service, SalesView for sales, and Radian6 for marketing are a few of the applications that are surfacing to help companies tap into the social media data widely available on the Internet (Greenberg, 2010). Many businesses are anxious to tap into the vast data source provided by social media, which is driving the growth of the social CRM market segment.

Many CRM vendors today offer a broad range of products. For example, vendors such as Microsoft, Oracle, SAP, Salesforce.com, and Teradata, provide enterprise level applications with a large variety of modules that integrate front-end and back-end systems (Tuzhilin, 2012). Other vendors such as Kana, Consona, RightNow Technologies, and Unica, provide highly specialized applications that serve a niche market (Tuzhilin, 2012). However, like many software markets today, the open source community has found a niche in CRM. In addition to the many commercial CRM platforms available today, there are numerous open source packages such as SugarCRM, vTiger, and Concurserve (Tuzhilin, 2012). Some of the open source packages have achieved significant success and notoriety. For example, SugarCRM has deployed large systems in companies such as Honeywell and Starbucks (Tuzhilin, 2012).

CRM outsourcing. Outsourcing has become one of the focus areas for companies seeking to reduce their costs, particularly in the field of information technology. Graf et al. (2013) found that CRM systems are one of the most popular areas for companies to outsource. Many industrialized economies, such as the United States, Japan, Canada, and some countries of Western Europe, have outsourced their CRM activities to companies in areas with lower labor costs (Kalaignanam & Varadarajan, 2012). Labor is a significant cost for all organizations and even more important in service organizations. Companies see outsourcing as a way to lower costs without compromising service. Managers believe they can outsource activities that are not part of their organization's core competencies to specialists in the field. For example, mortgage companies have reduced cost during the housing slump by outsourcing their CRM activities to firms in India (Graf et al., 2013).

However, some researchers believe that the negative impact outsourcing has on customer relationships will offset any gain (Kalaiganam & Varadarajan, 2012). Some business leaders believe that outsourcing has a significant and negative impact on customer relationships. If outsourcing does cause a negative customer impact, it is a hazardous option since customers are the most important resource in any company.

Outsourcing may conflict with the resource-based view of the organization. The resource-based view argues that firms should protect critical assets. Opponents of outsourcing argue that customers are the most valuable asset in the company (Graf et al., 2013). Proponents counter this argument by pointing out that specialized CRM firms provide expertise and service that most firms are unable to match. Making use of specialty services provides a strategic advantage to the business (Graf et al., 2013). Although the debate on outsourcing is still unsettled, it is clear that companies must weigh the cost impact with the impact on customer satisfaction when deciding on an outsourcing strategy.

CRM Benefits

Companies employ CRM to develop stronger relationships with customers. Josiassen et al. (2014) found that firms who have strong relationships with customers perform better than those who do not. However, companies can achieve many other benefits from using CRM practices. Some examples of benefits include enabling communication, providing timely feedback, analysis of customer information, and providing customized product offerings (Josiassen et al., 2014). Some of the most obvious benefits of CRM include customer retention, increased cross-selling

opportunities, increased customer acquisition, and the addition of profitable customers (Oztaysi et al., 2011). Caregivers in the medical field use CRM to provide customized service for patients. Researchers found that CRM in the healthcare industry enhances service quality, increases patient satisfaction, and increases mutual benefit (Gulliver et al., 2013). Managers in the banking sector use CRM systems to target profitable customers, integrate across channels, improve customer service, increase sales force effectiveness, coordinate marketing messages, increase employees motivation, improve decision making, and customize products (Yang, 2012). In short, CRM systems strengthen the relationship between buyers and sellers (Yang, 2012). However, companies have found benefits to CRM system use outside of the obvious benefits in customer facing situations.

One of the key benefits of CRM system use is that many companies are just beginning to realize the vast amount of customer data it stores. CRM systems enable companies to gather customer information and then use the knowledge acquired to improve products and services (Gulliver et al., 2013). How companies make use of the data stored in their CRM system often dictates the perceived success of their investment. Researchers discovered that firms who generate higher amounts of customer data outperform those who do not collect data (Josiassen et al., 2014). However, collecting customer data will not make the system successful on its own. Experts design the best CRM systems to collect, process, and use customer data, which enables service agents to resolve customer issues quickly. In contrast, firms that have partial or inaccurate customer data are at risk of frustrating customers and often experience reduced

profitability (Coltman et al., 2011). Once the CRM system has collected customer information, managers need a tool that allows them to analyze the data. Analytic CRM (aCRM) technologies perform the data analysis task in CRM systems. Analytic CRM allows targeted marketing, provides market basket analytics, assists in fraud detection, and segments customers based on predetermined criteria (Ranjan & Bhatnagar, 2011). Analytic CRM provides the data analysis managers need to extract value from their CRM investment.

A key benefit of CRM use is the reduction in customer abandonment rates. CRM allows companies to track customer issues, monitor service response, and assign customer inquiries to the appropriate expert (Xu et al., 2002). Firms can resolve customer issues quickly and improve customer satisfaction by getting customers to the right expert who can quickly solve their problem (Xu et al., 2002). Customer satisfaction is an essential measure of business success. Customer satisfaction is one of the primary factors affecting profitability. There are several benefits of increased customer satisfaction including higher levels of customer loyalty, customer referrals, and customer retention (Terpstra et al., 2012). However, the most valuable benefit of customer satisfaction is customer trust. Companies live and die based on customer trust. For example, in the financial services industry, banks collapsed because customers did not trust them to protect their money (Terpstra et al., 2012). A properly designed CRM system allows service professionals to solve customer issues quickly or direct them to an expert who can. Experts believe response time is a crucial factor in improving customer satisfaction long-term.

The potential benefits of CRM are numerous, and the list continues to grow as companies find new and creative ways to use customer information to deliver value-added products and services. Researchers have grouped the key benefits of CRM into four categories of (a) improved market share, (b) cost reduction, (c) customer satisfaction, and (d) the integration of the operations across the supply chain (Lee et al., 2010). Even with all the benefits that CRM systems offer, many businesses have implemented CRM systems that their leaders see as failures.

CRM Failures

CRM systems provide many benefits to companies, but there is no guarantee of success. Hershey Corporation suffered significant losses after implementing a CRM system, and firms in the financial sector have reported considerable difficulties in aligning customer needs to product offerings (Meadows & Dibb, 2012). Researchers have published studies that show CRM failure rates between 35% and 75%, while only 44% of executives surveyed reported satisfactory results from their new CRM systems (Frow et al., 2011). Adverse outcomes from CRM failures can spread to employees and customers alike. In the case of one particular Australian telecommunications company, the problems with their CRM implementation spurred the creation of a Facebook page titled I hate Siebel (Hsieh et al., 2012). The newly created site attracted over 3000 members including employees and customers (Hsieh et al., 2012). It is clear that poorly implemented CRM systems cause significant frustration to all stakeholders involved.

While there are many reasons for CRM failures, researchers have proposed seven key categories that explain why all CRM systems fail, including

- Companies view CRM system mostly as a technology investment,
- The company lacks a customer-centric vision,
- There is no understanding in the business of the customer's lifetime value,
- There is not enough support from senior leadership,
- The company did not re-engineer its business processes to match their CRM strategy,
- The company underestimated the challenge of complex system integration, and
- The company was not up to the task of effecting the change needed (Vella & Caruana, 2012).

A balanced approach to CRM implementations, starting with the right amount of employee interaction, may be one of the keys to CRM success. Researchers have suggested that improved interaction between human resources and IT service capabilities go a long way to combat high failure rates (Yang, 2012). However, even a balance between technology and people are often not enough. CRM implementations require a balanced approach that integrates technology, process, and people to provide a profound knowledge and response to customer needs (Wang M. L., 2013a). In order to maximize the chance of CRM implementation success, companies should target improvements along three lines including people, process, and technology.

Problems With CRM

Even with all the benefits of CRM system operation for both companies and their customers, there are still many negative aspects. One significant negative of CRM usage

is the CRM paradox. The CRM paradox describes the adverse reactions some customers may have when they recognize disparate treatment (Nguyen & Mutum, 2012). When some customers perceive disparate treatment, they may react by becoming upset and then spread negative information that can damage the firm (Nguyen & Mutum, 2012). Issues such as the CRM paradox are an inherent part of what some authors refer to as the dark side of CRM.

The academic literature contains many examples of firms that experienced negative consequences because they marketed the same items to customers differently based on each customer's status. One of the best-known examples is Amazon's use of dynamic pricing. Amazon sold DVDs to different customers at different prices depending on their status with the company (Nguyen & Simkin, 2013). Once Amazon's customers learned of the dynamic pricing strategy, there was a large-scale revolt. Customers saw this practice as an inappropriate use of CRM data.

Although Amazon's use of dynamic pricing is an often-cited example of negative behavior related to CRM use, it does not match the traditional definition of dark side behavior. Frow et al. (2011) described dark side behavior as more deliberate. For an organization to engage in true dark side behavior, they must deliberately take unfair advantage of customers using CRM data. Researchers have found that customers can also engage in negative CRM behavior. Frow et al. (2011) described specific negative behavior by customers as an attempt to take advantage of service providers by excessive complaints or the deliberate misuse of the product.

Frow et al. (2011) proposed a methodology for companies to avoid negative CRM behavior. The centerpiece of Frow's methodology is an enlightened CRM strategy. To prevent harmful behavior companies should seek to develop long-term relationships with customers, which are mutually beneficial and progressive. The remaining processes in the methodology included

- Value creation, which describes a mutually beneficial process that seeks to remove financial exploitation, customer lock-in, and dishonesty;
- Multichannel customer experiences, that ensures the customer receives a single consistent message from all parts of the business, this helps to eliminate customer confusion;
- Information management, where the service provider gathers customer data with the full knowledge and consent of the buyer who agrees with how the data is used, this helps eliminate privacy invasions and information misuse;
- Performance assessment, where the service provider should monitor and manage all touch points to ensure mutual value creation, this helps avoid relationship neglect; and
- Strategy development that aligns the customer and business strategy to ensure there is a match; this helps to prevent customer favoritism and spillover effects (Frow et al., 2011).

CRM Definitions

The development of CRM experience over the years has brought about many different definitions of CRM. Experts have grouped CRM definitions into three broad categories including (a) those narrowly focused on technology, (b) those with integrated customer-focused technologies, and (c) those that take wider view of the strategic management of customer relationships (Meadows & Dibb, 2012). However, a complete definition of CRM should include a combination of all three categories. Scholars agree that a full description of CRM should include a strategic approach to customer relationships that involves a concern for developing shareholder value by growing customer relationships with key customers and market segments (Meadows & Dibb, 2012). Maklan et al. (2011) suggested that the best way to ensure successful CRM investments is to begin by developing capabilities and processes that will improve customer relationships and follow up with the capital investment needed to sustain that capability. The argument by Maklan et al. (2011) suggests that the technology behind CRM plays a supporting role in the customer-focused processes. However, most of the CRM definitions in the literature are still technology focused.

Despite the call for scholars to develop a comprehensive definition of CRM, the business world still sees CRM as a technology-based solution. Padilla-Melendez and Garrido-Moreno (2013) described CRM as an information technology-centered strategic initiative designed to focus the firm's activities around the customer in order to provide personal service at every customer touch point. Similarly, Wei, Lee, Chen, and Wu (2013) defined CRM as the adoption of an information technology solution with its goal

to improve customer loyalty by improving customer relationships. The technology description of CRM has expanded to include electronic customer relationship management (eCRM). Zandi and Tavana (2011) defined eCRM as a collection of technology-based tools and processes that allow a firm to maximize the value from its e-business investment. In addition to eCRM, scholars have put forth additional definitions to describe each segment of the CRM application including operational CRM, analytic CRM, collaborative CRM, and social CRM. The overall focus remains on the technology.

Operational CRM. Early CRM systems consisted of many front-end customer processes and formed the core of what experts now refer to as operational CRM. Operational CRM (oCRM) includes many of the front office business processes that support all forms of customer contact including sales, customer support, and the identification of new customers (Mosadegh & Behboudi, 2011). Organizations use operational CRM to manage customer contacts and communications. Companies use operational CRM to facilitate the interaction between the business and its customers (Khodakarami & Chan, 2014). Users of oCRM systems collect data from a variety of contact points such as web, phone, e-mail, fax, and in person interactions (Tuzhilin, 2012). Systems used in oCRM are operational in nature and do little to provide analysis or trending of the data collected.

Technology experts combine customer data sources with customer-facing business processes to create an oCRM system. Experts sometimes achieve process integration using online tools such as customer inquiries, product orders, and support interactions (Alavi, Ahuja, & Medury, 2012). Some examples of oCRM systems include

call center applications, field service automation, and sales force automation (Sen & Sinha, 2011). Operational CRM provides the data that analytic CRM analyzes.

The technology behind oCRM is the online transaction processing protocol (OLTP) (Sen & Sinha, 2011). Operational CRM systems include many parts of an integrated information system that are all transaction-oriented. Examples of transactional oCRM systems include order management, billing, and customer service (Keramati et al., 2010). Operational CRM systems include many applications tied together across intranets and extranets. Some scholars have separated the communications part of oCRM, such as fax and email, into a different category; they dubbed communicational CRM (Lee et al., 2010). The concept of communicational CRM has seen limited acceptance and is giving way to more recent trends such as social CRM.

Analytic CRM. Operational CRM systems collect a vast amount of data that managers were anxious to utilize for a strategic advantage. The need to analyze data prompted the development of analytic CRM. Analytic CRM (aCRM) provides the business with information obtained from an analysis of data gathered from operational CRM. Analytic CRM includes an analysis of customer data and provides value to both the company and its customers (Alavi et al., 2012). Managers use analytic CRM to find the hidden information in customer data (Ranjan & Bhatnagar, 2011). Service agents use analytic CRM to spot trends and provide proactive responses to customers. Agents may even suggest products or services based on the customer's previous habits. Essential elements of aCRM include a means to collect, warehouse, isolate, combine, manage, and

share customer data (Gulliver et al., 2013). Each element of aCRM is crucial to ensure the right information is available to service agents at the point of customer contact.

Managers can better utilize aCRM when it contains large amounts of customer data. Metcalfe's law illustrates the value of large data sets. Metcalfe's law tells researchers that they must sum the value of the individual members of the system in order to determine the total value of the system (Alavi et al., 2012). The data captured on one, or even two customers provide only limited value. However, managers can use aCRM tools and start to see trends that were impossible to understand before they could combine the data collected from many customers.

The proper data structure is crucial to the success of any aCRM system. The fundamental part of every aCRM system is a data warehouse that has real-time data feeds from all critical operational systems (Shanks & Bekmamedova, 2012). The data warehouse feeds a data analytics module that analyzes the data using predetermined methods and provides reports to management. The data analytics module uses the online analytical processing (OLAP) protocol (Sen & Sinha, 2011). Most of the aCRM system is part of a larger system known as business analytics (BA). BA systems typically contain large amounts of data used to support decision making in the organization (Shanks & Bekmamedova, 2012). BA systems use much of the same technology already discussed such as data warehouses and OLAP. However, they also use advanced statistical techniques for modeling, simulation, forecasting, and data mining (Shanks & Bekmamedova, 2012). Automation of the data analysis process saves companies a

tremendous amount of time and allows them to be more responsive to their customer's needs.

The analytics provided by aCRM provide valuable insights into an organization's customer base. For example, aCRM can provide information on customer behavior patterns, customer satisfaction, support customer segmentation, and support proactive selling efforts (Keramati et al., 2010). Benefits of aCRM include cross-selling, up-selling, increasing the share of wallet, and fraud detection (Ranjan & Bhatnagar, 2011). Analytic CRM provides organizations with much of the information needed to develop a strategic plan for sales, service, and many other areas of the business (Ranjan & Bhatnagar, 2011). Companies use the information from aCRM systems not only in customer service activities, but also in marketing and strategic planning.

Saarijarvi et al. (2013) argued that data mining capabilities are of the utmost importance in future CRM work; they allow organizations to convert data to information and create customer value. Many of the current advancements in aCRM have evolved from work by information science researchers related to data mining. For example, data mining and statistical techniques are used to provide estimates of future revenues from customer probabilities (Tuzhilin, 2012). The capability to estimate customer probabilities are products of customer segmentation using clustering techniques. One example, where data mining techniques are used to grow revenues, is via sequence discovery. Sequence discovery allows organizations to identify the habits of the most profitable customers. Managers can then apply these learnings to other customers to increase revenue (Tuzhilin, 2012). The technology sector has not fully developed capabilities that allow

businesses to utilize the vast amounts of data they collect today. Data analysis is still one of the primary growth segments for information technology including CRM.

Collaborative CRM. One of the primary benefits of CRM is how it enables communication. Communication among stakeholders is an essential element of creating a collaborative work environment. An efficient CRM system allows an organization to increase collaboration among internal functions such as sales and other internal groups (Rodriguez & Honeycutt, 2011). Collaborative CRM systems provide the means to synchronize, manage, and distribute communication between functions within an organization and externally to the customer (Gneiser, 2010). Some scholars have expanded the scope of collaborative CRM to include the entire supply chain. When collaborative CRM includes the complete supply chain, companies see better responsiveness to customer requests (Alavi et al., 2012). Because collaborative CRM provides a means to communicate information to so many stakeholders, it is often referred to as communicative CRM (Gneiser, 2010). The primary goal of Collaborative CRM is to provide the results of the analysis from the analytical CRM system to the operational CRM system at the right time and via the appropriate channel (Gneiser, 2010). Collaborative CRM systems include the information technologies that enable efficient and effective communication throughout the supply chain.

The components of collaborative CRM are common in the workforce. Collaborative CRM technologies include many of the general mechanisms companies use to communicate internally and externally such as email, phone systems, fax, and websites (Keramati et al., 2010). As systems and technology advance in the areas of partner

relationship management and customer interaction centers, scholars included additional tools in the category of collaborative CRM. For example, project management, project collaboration, chat software, e-learning systems, webcasts, web audio, web video, interactive customer support, and interactive sales support are all collaborative systems (Tohidi & Jabbari, 2012). Developers are integrating conventional communication tools into CRM platforms to enable collaborative CRM.

Electronic CRM. With a strong link between technology and CRM, it is not surprising that many researchers see information technology as the most important part of CRM. Scholars that support technology dominance see the Internet and other information technology solutions as key enablers of relationship marketing (Su et al., 2010). Researchers who support the technology perspective have developed the term electronic CRM (Gneiser, 2010). Electronic CRM is linked closely to e-business initiatives and includes a variety of concepts, processes, and tools to help the business maximize its return on technology investments (Zandi & Tavana, 2011). The concept of eCRM is more prevalent in the business-to-consumer markets than in business-to-business markets.

Electronic CRM systems provide a more direct means of communication with customers and even a degree of self-service. The principal difference between eCRM and other CRM types is the direct contact with customers via Internet-based technologies (Harrigan et al., 2012). In operational CRM, service agents in a call center interact with customers and capture data about the interaction in a CRM system. Electronic CRM systems allow the customers to communicate directly with business systems via online tools without the need for human interaction. Electronic CRM captures the full online

user experience from pre-purchase to post-purchase (Milovic, 2012). Electronic CRM systems have largely replaced point of sale applications in many instances and allow the customer to carry out the entire purchase transaction without the need for a service agent. Advanced eCRM systems, such as those used by Amazon.com, will even suggest additional purchases based on the customer's buying history.

There are many potential benefits to eCRM. Harrigan et al. (2012) identified several potential advantages of eCRM including improved customer service, enhanced customer loyalty, product personalization, cost savings, sales generation, and increased profitability. Zandi and Tavana (2011) found a strong link between eCRM and manufacturing. Electronic CRM allows companies to streamline their manufacturing operations and provide customized products and services to each customer. The many benefits of eCRM can offer a source of long-term competitive advantage for an organization (Milovic, 2012). However, eCRM has seen less acceptance in the business-to-business environments where professionals still prefer personal interaction.

Social CRM. The spread of technology provides people with the ability to interact faster and more efficiently than at any other time in history. Social networks are becoming more popular in both personal and professional use. Social networks allow customers to communicate amongst themselves and with companies. Customers expect to participate in the customization of products they purchase, and want to provide input on future product features (Sigala, 2011). Social networks have become imperative in the implementation of CRM since they provide a convenient way for many customers to communicate. Social media is especially helpful for advertising and distributing new

products (Chikweche & Fletcher, 2013). Technologists have not fully developed methodologies to capture and use the data residing on social networks. Much of the data analysis of social network data still requires a significant amount of human interpretation.

The value of social networks in relationship marketing and CRM can be explained using social exchange theory. The precept of social exchange theory involves making commitments to the other party in hopes that they will reciprocate in the exchange (Roy, 2013). There is no guarantee of reciprocity and trust is an essential component of the relationship. Many believe that trust is the most important aspect of this relationship. Businesses can earn trust by doing what is best for their customers and adopting a customer advocacy strategy. A customer advocacy strategy requires open and honest communication with customers (Roy, 2013). Social CRM provides a means to facilitate communication between businesses and customers. Open and honest communication helps to build trust and enhances the relationship.

Social CRM provides a means to strengthen communication between stakeholders. Scholars have defined social CRM as the combination of customer processes with social media applications (Trainor et al., 2014). The goal of integrating customer processes with social media is to develop customer relationships by engaging customers in an interactive dialog. The primary defining characteristic of social CRM, as compared to other types of CRM, is that social CRM responds to customer information obtained via the use of social media technologies (Trainor et al., 2014). Examples of social media applications include blogs, discussion forums, and user communities. Some typical examples of social media applications are Facebook, LinkedIn, and Twitter

(Trainor et al., 2014). Social CRM seeks exponential expansion of the current CRM data set by including the vast amount of data in social networks.

Social CRM is a relatively new development in the CRM market. Social CRM began in 2007 and emerged as a shift in strategy from a transactional only relationship to one focused on customer interaction (Greenberg, 2010). However, the concept of social CRM dates back to 1996 when scholars predicted that future customers would manage their relationships with companies (Saarijarvi et al., 2013). Regardless of the exact start of social CRM it still has not achieved the level of integration and sophistication as the other aspects of CRM. Experts do not see social CRM as a replacement for traditional CRM, but instead see it as an extension that adds social functions, processes, and interactions to traditional CRM (Trainor, 2012). Social CRM is the natural extension of CRM platforms with the integration of emerging communications technologies.

A comprehensive CRM definition. Scholars have produced a larger number of definitions for CRM. The many forms of CRM systems used in the last 20 years may help explain how the various definitions of CRM developed (Chikweche & Fletcher, 2013). Although, there is no single definition of CRM, a review of the literature indicates that a comprehensive definition must go beyond the description of a technology-based solution. CRM is a broad business concept with roots in relationship marketing and links to information technology that includes the combination of people and processes in order to maximize the benefits realized from improved customer relationships (Oztaysi, Tolga, & Cengiz, 2011). In this regard, executives view CRM as a strategy that allows the use of internal resources to manage customer relationships in order to enable improved financial

performance and create a competitive advantage for the organization (Mohammed & Rashid, 2012). The significant failure rate of CRM installations may be influencing the desire to quantify the financial benefits of CRM investment.

The more recent definitions of CRM stress the strategic nature of the process rather than the technology. Padilla-Melendez and Garrido-Moreno (2013) described CRM as a technology-related strategic initiative that focuses the company's activities around the customer with the goal of delivering customized service at every interaction. A common theme emerging in all of the definitions is a view of CRM as a comprehensive group of strategies for managing customer relationships rather than a stand-alone initiative not linked to the overall business strategy (Chikweche & Fletcher, 2013). Many scholars see the best description of CRM as a technology-enabled business strategy that allows companies to build profitable customer relationships by optimizing customer interactions, streamlining internal communication, and improving business processes (Fan & Ku, 2010). Companies implement CRM strategies with the intention to reduce costs, increase market share, and improve revenue.

CRM Strategy

CRM has evolved to be more than just a tool. CRM provides a method to integrate strategy, people, processes, and technology (Mohammed & Rashid, 2012; Xu et al., 2002). The integration of business processes and streamlining of communications are a key advantage that continue to drive CRM investment. Experts see CRM as a key business strategy that has assisted companies in transforming from a product-centered to a customer-centered strategy (Hassan & Parvez, 2013; Xu et al., 2002). As businesses

adopt CRM as a strategy, they create value for themselves and their customers; however, companies should not take the transition to CRM lightly since the investment comes at a considerable cost (Coltman et al., 2011). Organizations should focus their CRM implementation on strategic goals where they have previously identified a need for development. Managers can minimize costs associated with the initial investment, target resources to problem areas, and maximize their return on investment by focusing on formerly known issues (Smith, 2011).

Organizations have tried to develop CRM strategies using both top-down and bottom-up approaches. A top-down design requires leaders to select and implement a CRM strategy (Ahearne et al., 2012). When a business uses a top-down design, executives develop a plan and then disseminate it to others in the company who must comply. In contrast, a bottom-up approach uses teams to make joint decisions (Ahearne et al., 2012). The bottom-up approach integrates multiple decisions at the lower levels in order to provide an overall strategy at the executive level. Kumar et al. (2011) found that senior levels of management devised the most effective CRM strategies. A top-down design is the most effective method to develop a customer-focused strategy.

Developing a comprehensive CRM strategy is a complex process involving many parts of the business. Scholars have attempted to identify the essential elements of a CRM strategy to help managers with this process. The primary components of a CRM strategy include a measure for customer satisfaction, training employees, continuous communication with customers, achievable targets, performance management, technology to assist with relationship management, and ownership at the executive

leadership level (Chikweche & Fletcher, 2013). The value chain concept is also a useful tool to assist managers in the development of CRM strategies.

CRM value chain. Both managers and customers expect value from their investments. Expectations are the same when investing in a CRM system. Historically, CRM has provided more value to the business than the customer. The purpose of value based CRM is to manage a collection of customer relationships in order to maximize corporate profits (Gneiser, 2010). The value chain concept provides a method to measure the value of any given CRM process. Chikweche and Fletcher (2013) suggested that the stages of the value chain for CRM include customer portfolio analysis, customer familiarity, network improvement, creation of the value offering, and relationship management. Keramati et al. (2010) suggested a simpler value chain that included technological resources, infrastructure-related resources, CRM processes, and CRM capabilities leading to organizational performance. Researchers have grouped CRM value chains in two broad categories: those based on technology and those based on customer orientation.

In the traditional view of the value chain, the organization adds value at each step of the process (Gummesson, 2002; Lo, Stalcup, & Lee, 2010). In a manufacturing organization, major process steps might include items such as inbound logistics, production, shipping, marketing, and service. The implementation of information technology systems allows organizations to redesign traditional value chains to improve efficiency (Gneiser, 2010). The advent of communications technology provided a means to share information with suppliers leading to improvements in external supply chains

(Rodriguez & Honeycutt, 2011). The concept of the value chain applied to CRM provides researchers a method to measure the value at each stage of the process.

The core element of the CRM value chain is a product creation lane. However, the value chain starts with identifying a customer need. The company must then be able to capture the opportunity, develop an offering, build a product or service, deliver the product, and provide follow-up service. A CRM system supports the core blocks with information technology, people, and processes. When all blocks work as intended, the result is a satisfied customer and ultimately organizational success.

CRM supply chain. Scholars have suggested that there is a strong relationship between supply chain management and CRM. Meadows and Dibb (2012) went so far as to suggest that CRM emerged from the relationship between marketing, business strategy, and supply chain management. Lee et al. (2010) suggested that the purpose of supply chain management is the integration of communication channels between a company and its customers in an effort to maximize customer value. When companies engage suppliers to reduce cost or increase response to customers, they expand their value chain. Suppliers become a critical part of the supply chain to improve customer value.

The implementation of information technology helps create additional benefits in the supply chain. Information technology increases the speed of communication, improves the service quality, and reduces cost (Lee et al., 2010). To achieve the desired results, it is often necessary to integrate CRM with other systems. For example, CRM systems along with ERP are key application suites helping to drive supply chain

integration efforts (Lee et al., 2010; Xu et al., 2002). Collaborative CRM systems allow wider system integration throughout the supply chain and helps to improve responsiveness to customer needs (Alavi et al., 2012). CRM applications are a critical part of supply chain improvement strategies that allow improved communication between companies, suppliers, and customers. Companies can increase the effectiveness of their CRM installations by integrating with other backend systems.

CRM Performance Measures

Researchers often use the terms CRM measures, and business performance measures to mean the same thing. Even in cases where they try to keep them separate, they are merging. For example, researchers found that CRM performance measures are merging with operational measures related to ERP (Schniederjans et al., 2012). Typical performance measures related to CRM in the literature include profit, customer satisfaction, customer retention rate, and average profit by customer (Johnson et al., 2012). Business leaders often use similar measures to measure sales performance without the use of CRM. The conflict in standards has prompted scholars to develop CRM measures that are more comprehensive. Most researchers recommended using a two-dimensional measure of CRM performance that includes both financial and market measures (Garrido-Moreno & Padilla-Meléndez, 2011).

The type of measures a firm uses has an impact on their overall business success. Azad and Darabi (2013) found that firms with strong CRM capabilities performed better on organizational measures. Scholars have classified organizational measures into categories of effectiveness and efficiency. Effectiveness metrics shows to what extent the

organization is achieving its goals (Chang et al., 2010). Efficiency measures are typically a ratio and describe the amount of organizational resources consumed to achieve organizational goals (Chang et al., 2010). Regardless of the category of measurement, researchers have agreed on some common characteristics. Performance measures should include numerical results over a given time, ability to show results by division, a view of performance over time, flexible design of the measure, dynamic changes when required, and a view of future performance (Oztaysi et al., 2011). Typical measures of organizational performance include customer satisfaction, profitability, and market effectiveness (Chang et al., 2010). However, organizational measures may not give a complete picture of a firm's performance when using CRM. Historically, organizational performance measures have fallen short of expectation and managers have called for a balanced performance measurement system to support decision-making, management control, and reporting requirements (Shafia et al., 2011). Scholars introduced the balanced scorecard in an effort to provide a complete measurement system for CRM performance.

Shafia et al. (2011) introduced a CRM balanced scorecard based on previous work on organizational balanced scorecards by Kaplan and Norton that includes financial, customer, internal, and growth aspects. The balanced scorecard uses a combination of both financial and non-financial measures to give the company an in-depth view of performance. A typical CRM balanced scorecard includes four sections. The first part contains organizational performance measures such as return on investment and customer lifetime value (Shafia et al., 2011). The second part takes a view from a

customer perspective and includes measures such as customer complaints, product quality, and service delivery (Shafia et al., 2011). The third part looks at internal company processes and includes a measure of price, brand, customer involvement, and advertisement (Shafia et al., 2011). The fourth section measures the infrastructure and has numerous measures including CRM capacity, continuous improvement, training, organizational commitment, and communication (Shafia et al., 2011). The balanced scorecard provides firms with a comprehensive measurement system that gives them a complete view of business performance.

CRM Success Measures

Although the balanced scorecard provides a measure of business success, managers still struggle to measure the impact of CRM on their company. Business leaders are looking for scholars to help develop CRM measures. Researchers must first understand how to measure CRM success before they can determine if systems are meeting the needs of business users. Oztaysi et al. (2011) discovered that 64% of companies do not know how to evaluate the value CRM systems bring to their business. Scholars are hard at work publishing studies addressing the gap in CRM measures. Researchers have developed ten different methods to measure CRM success including

- Indirect measurement models,
- Measurement of customer facing operations,
- Critical success factors,
- Behavioral dimensions of CRM effectiveness,
- CRM scale,

- Relationship quality,
- Customer measurement assessment tool,
- Customer management process,
- Relationship management assessment tool, and
- CRM scorecards (Oztaysi et al., 2011).

The CRM scorecard has emerged as one of the most popular CRM measurement tools. Researchers based development of the CRM scorecard on the balanced scorecard for business. Oztaysi et al. (2011) settled on the CRM scorecard as the preferred method of CRM measurement. CRM scorecards include dimensions for CRM outputs, customer dimensions, CRM processes, and organizational alignment (Oztaysi et al., 2011). The CRM scorecard further subdivides these categories into additional characteristics that measure overall CRM system performance. However, the CRM scorecard does not include sections on system design, selection, and implementation, which are some of the primary reasons that CRM systems fail.

Reasons CRM systems fail. Business leaders today are looking for tools that increase efficiency throughout the entire supply chain. Systems that are capable of influencing the entire supply chain are large, expensive, and very complex. Every additional step of complexity in a system introduces another potential failure point. Today's CRM systems cover a broad range of customer interactions from pre-order through the delivery of products and services (Meadows & Dibb, 2012). Companies are using CRM systems in an effort to track and manage all of their customer activities. The

scope of the value-chain impacted by current CRM operations provides many opportunities for failure of the system.

Some of the reasons CRM systems fail include a rigid organizational structure, strict corporate culture, inadequate understanding of the customer base, inappropriate technical resources, failure to create real value for customers, and poor employee training (Meadows & Dibb, 2012). More broadly, the reasons for CRM failures can be broken down into four broad categories that include the company, customers, technology, and staff (Meadows & Dibb, 2012). Sundar et al. (2012) found that non-technical issues are the most common reason for CRM failure. The most common reasons for CRM failure are due to organizational inability to achieve the required process changes. Many companies expect a new technology system to solve many of their internal issues without investing time into the business process re-engineering needed to make the system successful. Technology systems can only improve a process that works.

Once a company selects and installs a CRM system, the quality of customer data determines the actual effectiveness of the overall system. Poor data quality is a common cause of organizational failure when implementing a CRM system (Peltier, Zahay, & Krishen, 2013). Common reasons for poor data quality are communication silos, disagreements on ownership of customer data, failure to share data with other functions, and no overall plan for the collection and use of customer data (Peltier et al., 2013). CRM systems are of little value to an organization if they collect large amounts of data that goes unused. The most successful companies use the data in their CRM system to improve customer relationships.

Reasons CRM systems succeed. Managers can learn a lot by looking at why CRM systems fail and not repeating those mistakes. It is, however, worthwhile to understand particular tips that have helped some CRM systems succeed. Scholars have found one of the main factors that determine CRM success is a sponsor for the initiative who is a member of the board of directors (Sundar et al., 2012). A high-level sponsor in the organization can provide resources and motivation to aid system success.

Additionally, most scholars agree that CRM implementations cannot be successful unless businesses enact widespread process changes throughout the organization to support an overarching CRM strategy (Sundar et al., 2012). The organization must engage in business process reengineering to verify that all of their internal processes work as expected and are compatible with the new system. Additional factors that affect CRM success are commitment by top management, process development, data management, and training of staff (Sundar et al., 2012). Although none of these factors will independently guarantee a successful CRM implementation, they all work together with strong project management to help CRM projects succeed.

Transition

Businesses make significant investments in CRM systems. However, many organizations struggle to realize the expected financial returns. The purpose of this study was to provide additional information on how CRM system operation may influence the financial performance of a service organization. The research design used for this study was a quantitative correlational study. The subject organization chosen for this study was a global manufacturing and distribution company based in the United States. This

company recently implemented a CRM system targeting customer interactions by their service teams.

The background and problem statement discuss the expectations and disappointments that some companies shared regarding their CRM implementations. The purpose statement identified the research method as a correlational study and provided further details on the company that was the subject of the study. The central research questions acted as a guide for conducting the study.

Section 1 contained a discussion of the framework used to develop the study. The service-profit chain emerged as the obvious framework for this study after a review of the professional and academic literature. Prior researchers established a link in the service-profit chain between service climate and firm profitability; however, the service-profit chain did not previously include CRM operation as a critical variable. The most significant modification of the service-profit chain in this study was the inclusion of CRM usage as a key variable.

Section 1 also includes a list of definitions that readers may find useful if they are unfamiliar with standard business terms related to CRM. Section 1 contains the reason for the study as well as the assumptions, limitations, and delimitations. The justification included the contribution to business practice and implications for social change. Finally, this section concludes with a comprehensive review of the current professional and academic literature related to CRM systems.

Section 2 of the study includes a review of the purpose of the study and additional details on the target company and the researcher's role. Section 2 also contains a detailed description of the research method, data collection, and data analysis techniques.

Section 2: The Project

The growth of the CRM market does not appear to coincide with the current global economic swings. CRM operation is growing rapidly despite the tough economic times (Greenberg, 2010). For example, in 2007 AMR Research reported an increase in CRM software revenues of 12% (Greenberg, 2010). Recent estimates indicate a modest growth rate and a market of approximately \$13 billion (Padilla-Melendez & Garrido-Moreno, 2013). Regardless of how CRM revenues change in relationship to overall market conditions, it is clear that there is still a high demand for CRM systems globally. However, the full impact of CRM systems on a firm's performance has not been thoroughly studied (Josiassen et al., 2014). Specifically, the impact of CRM on a company's profitability is not entirely understood (Josiassen et al., 2014). Chang et al. (2010) found that only 30% of organizations that introduced CRM into their organization achieved improvements in financial performance. With such a low success rate, executives are beginning to question the investment required in CRM. Scholars need to understand the benefits of CRM use in order to help managers prioritize investments in CRM systems with other critical strategic needs.

In Section 2, I recapture the purpose of the study, a description of the role of the researcher, an explanation of participant strategies used in the study, further information on the research method and design, details on the study population, and an explanation of the ethical research process as it applies to this study. Additional topics covered in this section are details about data collection, data instruments, data analysis, reliability, and validity.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between the three variables in the study, which were CRM system usage, customer satisfaction, and gross revenue. The independent variables were CRM system usage (X_1) and customer satisfaction (X_2). The dependent variable was gross revenue (Y). The target population included 203 service branches from an industrial equipment manufacturer in North America. This population was appropriate for this study because the target company provides a representative sample of industrial service firms in North America with a fully implemented CRM system.

The results of this study should promote constructive social change by helping companies understand how to allocate their investment dollars. Furthermore, managers may use the results to identify successful strategies to implement CRM systems or develop a method to justify future investment. In addition to justifying the cost of a CRM system, firms may save money by not investing in a CRM system if the cost exceeds the benefits. In either case, business leaders can use a portion of the savings for sustainability projects or in community development projects.

Role of the Researcher

The primary role of the quantitative researcher is to analyze complex relationships in numerical data, test hypothesis, and understand any causal inferences (Bergman, 2011). Since the data for this study were from secondary data sources, my primary role as a researcher was that of data analysis. Secondary data plays a vital role in social science research (Bevan, Baumgartner, Johnson, & McCarthy, 2013). However, secondary data

can also suffer from issues with source quality, measurement bias, or selection bias. In this study, the national service director authenticated the accuracy and quality of the data of origin, thus minimizing concerns with the source data. The use of archival corporate data and avoiding survey data eliminates the risk of measurement bias. Additionally, including data from the full population of service centers in North America minimized the likelihood of selection bias. Lastly, I reported the study results accurately, ethically, and without bias.

Company XYZ (pseudonym) agreed to provide the secondary data necessary for this study. The North American National Service Director agreed to provide archival data and signed the data use agreement. Company XYZ is a large multinational conglomerate with four major international divisions. Two of XYZ's divisions manufacture industrial products, one division manufactures subcomponents, and the final division focuses on sales and distribution of products. All four divisions have operations globally.

I work for company XYZ in one of the product divisions. In an effort to prevent any ethical issues or biases, several precautions were in place. Since I work in one of the product divisions, the data came from the sales and distribution division. Using data from a sister division helped reduce the risk of issues related to social desirability, biased responses due to cognitive priming, and perceived coercion to participate. This study did not rely on the use of interviews or surveys. The company already collects the data used for this study for other purposes. Data collection consisted of a series of queries from existing company databases. The use of secondary data helped eliminate the risk of biased responses from personal opinions. The data use agreement laid out clear

guidelines for how the researcher could use the data provided by the company. Appendix A includes a copy of the data use agreement.

Participants

This study did not make use of primary data, and for this reason I did not directly collect data from participants. Instead, the national service director of XYZ Company provided archival data for each of the independent variables used in the regression model. The service director provided existing data from the company's operational databases. The data supplied was a subset of the data available from each of 203 North American service branches. A subset of the data provided by the service director was sufficient to develop a regression model for this study.

Research Method and Design

Research Method

Academic researchers have a broad range of research methods available to them. However, scholars have summarized all of these methods into three overall categories that include qualitative, quantitative, or mixed methods (Venkatesh, Brown, & Bala, 2013). Qualitative research involves the collection and analysis of textual data through observation or interaction with participants (Rennie, 2012). In contrast, quantitative research uses numerical data to test the hypothesis and predict future events (Petty, Thomson, & Stew, 2012). Mixed method research designs combine essential features of quantitative and qualitative research into one research design (Fetters et al., 2013). In this study, I used a research question that seeks to understand the relationship between CRM system usage and company revenue. To understand this relationship and predict

outcomes, I used the statistical procedure of multiple regression. When a researcher uses a numerical analysis to understand the relationship between a dependent and independent variable, they should use a quantitative method (Bergman, 2011; Bettany-Saltikov & Whittaker, 2013; Petty et al., 2012). A quantitative method was most appropriate for this study.

Research Design

I selected a correlational design for this study. Although some authors would include quasi-experimental and descriptive, at a simplistic level, there are only two basic types of quantitative designs: correlational and experimental (Bettany-Saltikov & Whittaker, 2013). Experimental studies measure the key variables before and after a treatment is applied. Researchers use the application of a treatment to help determine causality. In a descriptive or correlational design, researchers measure the key variables only once. One drawback of the correlational design is that it cannot directly determine causality. In this study, there are no treatments and the data already exists for the key variables; therefore, a correlational design was the most appropriate (Aussems et al., 2011; Bettany-Saltikov & Whittaker, 2013; Nenty, 2009).

Population and Sampling

The total population for this study included 203 service branches in North America for company XYZ. Company XYZ installed a CRM system approximately 5 years ago to help them track and respond more efficiently to customer service requests. Along with CRM system usage, company XYZ also monitors customer satisfaction and

revenue for each branch. Company XYZ monitors all the key variables for this study at the branch level covering a vast geographic area.

Cluster sampling, a form of probabilistic sampling, provided the best sampling method for this study. Researchers prefer probabilistic sampling for quantitative research, particularly when performing standard statistical analysis (Daniel, 2012). Cluster sampling is a form of probability sampling that randomly selects elements of the total population in naturally occurring groups (Daniel, 2012). Researchers have found cluster sampling particularly useful with geographically confined clusters.

The subject company in this study has their North American operations divided into 16 distinct geographic territories, with an average of approximately 13 service branches in each territory. The smallest territory has eight service branches. In order to achieve the minimum sample size required for this study, I attempted to obtain data from at least four branches in each region. Another option to achieve the minimum sample size is to include more branches from each region; however, given the number of branches per territory, at least six territories, or clusters, were included in the study. In this study, I used single stage cluster sampling and attempted to include all data points in each cluster. Daniel (2012) found that cluster sampling might yield less sample error as compared to simple random sampling with smaller sample sizes. There are some drawbacks with cluster sampling including increased combined variance, more sophisticated data analysis, and increased error (Daniel, 2012). Researchers can avoid the drawbacks associated with cluster sampling by using a large sample size.

Schimmack (2012) found that a power analysis is essential to ensure an adequate sample size for a correlational study. Researchers confirmed that the statistical software package G*Power 3.1.9 was a reliable tool to calculate minimum sample sizes (Faul, Erdfelder, Buchner, & Lang, 2009). I conducted an apriori power analysis using G*Power 3.1.9.2 assuming a medium effect size of ($f = 0.15$); $\alpha = 0.05$ to determine appropriate sample sizes for this study. G*Power calculated a minimum sample of 68 data points to achieve a power of 0.80. Increasing the sample size to 146 resulted in a power of 0.99. I targeted a minimum of 68 data points for this study but strove to get as close as possible to the full population of 203 (Figure 2).

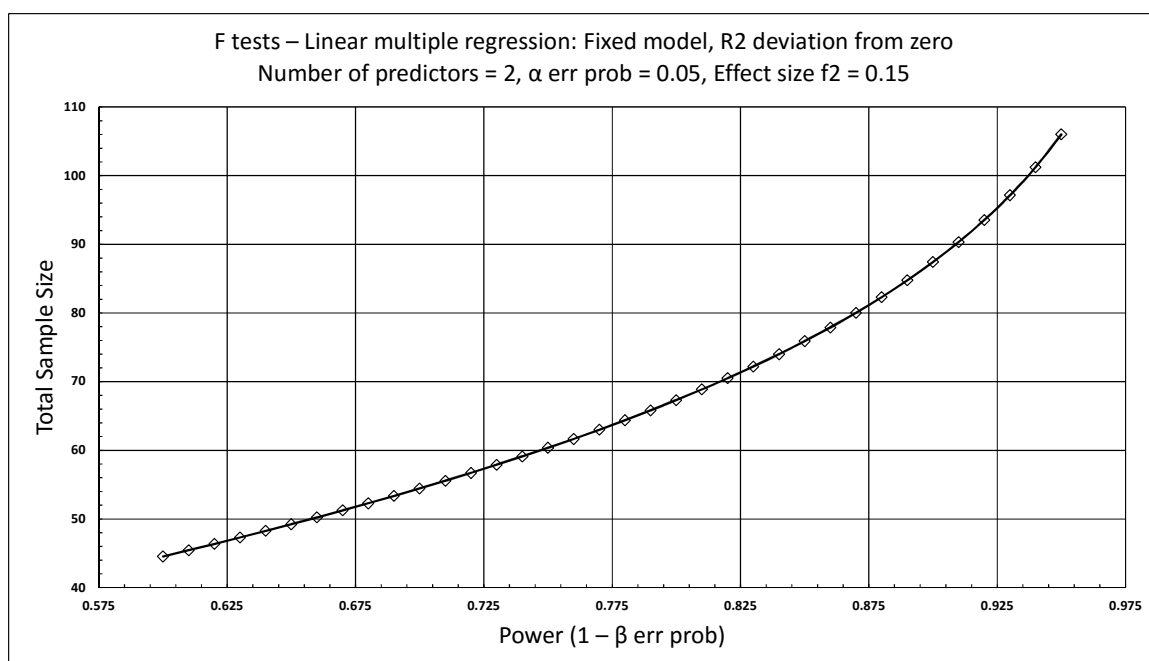


Figure 1. Power as a function of sample size.

A medium effect size ($f = 0.15$) and power (0.80) was suitable for this study. I based the use of the medium effect size on the analysis of three articles where revenue

was the outcome measurement (Abdullateef & Salleh, 2013; Fan & Ku, 2010; Terpstra et al., 2012).

Ethical Research

Student researchers must submit their study proposal to Walden's IRB prior to collecting any data. The IRB reviews the proposal to ensure the student is following all required laws, institutional policies, and professional ethical standards (Blee & Currier, 2011). Researchers have an obligation to make sure their work meets the highest levels of reliability, credibility, and ethics. Walden's IRB reviewed and approved this study (approval number 05-15-15-0316543).

The research community widely agrees that scholars must do everything possible to protect vulnerable populations and avoid any unnecessary risks to their participants (Blee & Currier, 2011). The design of this study has eliminated risks to participants by using secondary data. All data used in this study come from databases and, therefore, does not require collection from individuals. There are no human participants for this study. Company XYZ provided the data for the study and authorized the use of the data via a data use agreement (See Appendix A for a copy of the data use agreement).

Since I am an employee of company XYZ, there may be concerns related to conducting a study in the same organization. The use of secondary data allows me to eliminate many of the concerns with research in the same company. For example, secondary data reduces or eliminates ethical challenges regarding social desirability, biased responses, and perceived coercion. I dealt with confidentiality breaches through a

data use agreement and by removing any distinguishing descriptions of the company in the study.

I protected the company's identity by disguising the real name. I only referred to the company as company XYZ. Similarly, each of the company's branches will receive only a nondescript numerical designation that will prevent the identification of the branch. I will keep all data used for this study in a secure encrypted and password protected folder under my direct control. After 5 years from the study completion, I will destroy all data pertaining to this study.

Data Collection Instruments

I collected the data for this study from three separate corporate databases used in the daily operations of company XYZ. Clary and Kestens (2013) found that secondary data sources provide a representative description of phenomena as it exists. All three variables are ratio, as they exist now. The survey provider collected the data for customer satisfaction initially as interval variables but then converted to ratio scores as part of the Net Promotor Score (NPS) process.

The data for CRM usage came from simple queries in the company's CRM database to provide a count of service events over a given period. Company XYZ uses Oracle's Siebel CRM application for call center and service management. The data for customer satisfaction comes from the corporate survey database provided by Allegiance. Allegiance is an industry standard solution provider for feedback systems to collect the voice of the customer. Company XYZ uses the Allegiance solution to reliably capture customer feedback and collate it into standard numerical scores using the NPS scale. Data

for gross revenue comes from the corporate ERP system. Company XYZ uses Oracle 12 to manage its operations and to collect financial data. The company's accounting team verifies the financial data before generating reports required by federal agencies.

When using secondary data sources, the researcher must consider the quality of the source data, measurement bias, and selection bias (Bevan et al., 2013). Researchers can address data quality by considering the original purpose of the data to ensure it fits the study needs and verifying the reputation of the data creators (Bevan et al., 2013). Company XYZ collected the data used in the study as part of their operations and uses management reports and reviews to verify the accuracy of the data on a regular basis. Additionally, company XYZ is a Fortune 100 company that uses these data to meet their public reporting requirements thus validating its accuracy. Lastly, the inclusion of all the data for a given period ensures there is no chance of selection bias. Overall, the use of secondary data provides an accurate method to test the theoretical framework identified in previous studies (Wang X. L., 2012). I will maintain the raw data for a period of 5 years and make them available for inspection as appropriate in accordance with the data use agreement.

Data Collection Technique

In this study, I sought to understand potential relationships between CRM system usage, customer satisfaction, and gross revenue in the industrial service industry. I used a form of structured record reviews to collect data for all three variables in the study. The North American service director provided CRM usage from the CRM database as a count of logged issues. Similarly, the service director provided customer satisfaction from the

customer survey database. Lastly, he provided revenue from the corporate ERP system. The service director provided the data in spreadsheet format. I combined all data into one spreadsheet for analysis.

The use of existing data from corporate databases helped to reduce the cost of collecting data, reduced the time required to collect the data, and improved the reliability of the data. Additionally, using existing data reduced the time to complete the study and provide results that are more reliable. Using existing data was the preferable method of data collection for this study.

Data Analysis

The researcher designed this study to answer the research question: What is the relationship between CRM system usage, customer satisfaction, and gross revenue in the industrial service industry? Further development of the research method required the formulation of the null and alternate hypothesis that relates the dependent and independent variables.

RQ-1: What is the relationship between CRM system usage and gross revenue in the industrial service industry?

H1_o: There is no relationship between CRM system usage and gross revenue in the industrial service industry.

H1_a: There is a relationship between CRM system usage and gross revenue in the industrial service industry.

RQ-2: What is the relationship between customer satisfaction and gross revenue in the industrial service industry?

H2_o: There is no relationship between customer satisfaction and gross revenue in the industrial service industry.

H2_a: There is a relationship between customer satisfaction and gross revenue in the industrial service industry.

Multiple regression analysis is a popular statistical method used to understand how one or more predictor variables influences the independent variable (Beckstead, 2012; Bonett & Wright, 2011). Researchers use multiple regression analysis to understand the extent that the independent variables affect the prediction of the dependent variable (Tonidandel & LeBreton, 2011). Researchers use other statistical tests such as ANOVA and t-tests to test for correlation between variables (Levine, Ramsey, & Smidt, 2001). However, regression analysis is an appropriate statistical test to use if the goal is to assess the influence of one or more predictor variables on the response variable (Levine et al., 2001).

The predictor, or independent, variables in this study were CRM system usage (X_1) and customer satisfaction (X_2). CRM system usage is a numerical variable in the form of an integer with a minimum value of zero and no maximum. Customer satisfaction is a numerical variable in the form of a rational number with a minimum of zero and a maximum of one (or 0 to 100%). The single independent variable is gross revenue (Y). Company XYZ reports gross revenue in US dollars with a minimum of zero and no maximum. The linear equation that describes the relationship between the variables in this study is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

Where,

$Y = \text{Gross Revenue}$

$\beta_0 = \text{The } Y - \text{intercept}$

$\beta_1 = \text{Slope of } Y \text{ with variable } X_1 \text{ when variable } X_2 \text{ is held constant}$

$X_1 = \text{CRM usage variable}$

$\beta_2 = \text{Slope of } Y \text{ with variable } X_2 \text{ when } X_1 \text{ is held constant}$

$X_2 = \text{Customer satisfaction variable}$

The use of secondary data minimized the need for any data cleaning procedures. Most of the data integrity issue came from missing data. Researchers have developed several methods to deal with missing quantitative data including, more in-depth enquiries from the investigator, numerical estimates, and excluding that record from the study (Bevan et al., 2013; Button, et al., 2013; Unluer, 2012). In this study, I excluded any records that were missing data from the final data set for analysis.

Assumptions

There are five major assumptions related to multiple regression analysis: multicollinearity, normality of error, homoscedasticity, linearity, and independence of errors (Levine et al., 2001; Williams et al., 2013). Collinearity, or multicollinearity for multiple variables, refers to the situation when a high degree of correlation exists between one or more predictor variables. Multicollinearity can result in unstable estimates of the regression coefficients or inflated standard errors and confidence intervals. Statisticians use the variance inflation factor (VIF) to test for collinearity among variables. A VIF of one would indicate no correlation between variables (Levine et al., 2001). Researchers

generally agree that a VIF of under 10 for any variable is acceptable and that was the criteria used in this study (Frey et al., 2013; Levine et al., 2001; Pal & Bhattacharya, 2013). If there was any collinearity between variables, I had planned to run separate regression models with one variable removed to see which provided the best fit. However, that was not necessary in this study.

The second assumption for regression that must be satisfied is the normality of errors. In regression studies, the error refers to the difference between the observed and predicted values in a regression model (Williams et al., 2013). There are many standard tests for normality; however, in this study I analyzed the errors using the normality tools in SPSS. Since the dataset had less than 2000 data points, the Shapiro-Wilk test was the appropriate normality test (Williams et al., 2013). The Shapiro-Wilk test uses a null hypothesis of normality; therefore, researchers use a significance value of $p \leq 0.05$ to accept the null hypothesis and an assumption of normality (Williams et al., 2013). An assumption of homoscedasticity requires that model errors have an unknown but constant variance (Williams et al., 2013). Homoscedasticity is an important assumption in regression modeling. The most common approach to solve normality and homoscedasticity errors is through data transformations (Levine et al., 2001; Williams et al., 2013).

The concept of linearity means that the model specifies a linear relationship between variables, but the actual response is non-linear (Williams et al., 2013). Scholars can check linearity by plotting the residuals against the predicted value of the dependent variable. The plot of residuals should show a straight line (or zero mean) relationship.

The last assumption, independence of errors, requires that the errors be independent at each value of the predictor variable (Levine et al., 2001). The most common method of testing for independence of errors is using a residuals plot (Levine et al., 2001). The plot should show the residuals in the observation order of the data. An inspection for outliers will show any obvious violations (Levine et al., 2001). The method to deal with issues due to independence of errors varies according to the cause but may include shifting to a nested or time series analysis (Williams et al., 2013).

Although it is not an assumption, potentially the most important, parameter in regression modeling is the coefficient of determination (R^2). The coefficient of determination is a ratio expressed by the regression sum of squares as compared to the total sum of squares. The coefficient of determination provides a measure of how well the regression model fits the data (Levine et al., 2001). The value of R^2 gives the researcher a direct measure of what percent of the variance in the data is explained by the regression model (Rodriguez & Honeycutt, 2011). The coefficient of determination can have a value from -1 for a perfect negative correlation to +1 for a perfect positive correlation. There is no minimum value of R^2 (Levine et al., 2001). The value of R^2 merely gives an indication of the completeness of the regression model in explaining the model's variation.

I used SPSS version 21 to complete all the statistical analysis in this study. SPSS is a statistical software package commonly used in academic research (Beckstead, 2012; Shafia et al., 2011; Yilmaz & Kaynar, 2011). The only exception is the sample size calculations completed in G*Power.

Study Validity

Quantitative researchers need to address authentication issues related to reliability and validity. Reliability is an indication of the quality of the measurement and is a precondition for validity (Venkatesh et al., 2013). Researchers typically consider results reliable if they can obtain the same results repeatedly. The use of secondary data collected from corporate databases ensured that future researchers can get the exact data employed in this study. Future researchers will be able to duplicate the study to obtain stable and consistent results using similar statistical processes.

Venkatesh et al. (2013) stated that there are three general types of validity related to quantitative research including measurement validity, design validity, and inferential validity. Measurement validity describes how well the instrument measures what it was intended to measure. Since there is no instrument in this study, measurement validity is not applicable. Design validity includes both internal and external validity, which are both applicable to this study. External validity describes how readers can apply the results of the study to other groups or situations (Venkatesh et al., 2013). The focus of external validity is how well the study applies outside of the study environment. Conversely, internal validity takes an inward view of the study. According to Petty et al. (2012) internal validity describes credibility or truth-value of the study. Internal validity gives the reader some confidence that the results of the study are accurate based on the procedures used in the analysis.

To ensure the external validity of this study, I provided the following recommendations. Since the population of this study came from an industrial

manufacturing company in North America, readers should not apply the results of this study to other types of manufacturers or geographies. Additionally, many other variables may affect revenue. For this reason, readers should not apply the results of this study to timeframes outside of the study parameters without further research. Since this study does not include any experimentation with variables, there is no risk of interaction effects. Based on the threats to external validity, readers can apply this research to other industrial service companies in North America with little risk.

Typically, threats to internal validity arise from experimental procedures, treatments, or the experience of participants that may influence the researcher's ability to make a correct inference (Venkatesh et al., 2013). The use of secondary data in this study helps to eliminate many of the risks from participant interaction such as maturation, mortality, diffusion of treatment, compensatory demoralization, compensatory rivalry, testing, and instrumentation. Using a minimal acceptable sample size of 68 and attempting to sample the full population helped minimize the risk of threats to validity due to regression or selection.

Inferential validity, or statistical conclusion validity, speaks to the legitimacy of the correlation between the dependent and independent variables (Venkatesh et al., 2013). Quantitative researchers minimize threats to statistical conclusion validity by selecting the appropriate level of significance (α -value) for their study (Levine et al., 2001). An appropriate α -value helps to minimize the risk of a Type I error. A Type I error occurs when the researcher rejects the null hypothesis when they should have accepted it (Levine et al., 2001). A α -value of 0.05 is typical for business research and is what I used

in this study (Daunt & Harris, 2013; Hassani et al., 2013; Pal & Bhattacharya, 2013; Williams & Naumann, 2011).

Transition and Summary

Section 2 included a detailed discussion of the quantitative correlational study design. Key parts of section 2 included the selection of the North American industrial service company for data collection and detailed discussion of the data analysis techniques. Additionally, I provided a justification and discussion of the selection of multiple regression as a valid statistical test and a discussion on the reliability and validity of the study using secondary data.

Section 3 of the study will include the results of the analysis and interpretation of the results. The discussion in section 3 will be in the context of the research question and hypothesis discussed in section 1 and 2. Additionally section 3 will contain implications for social change, recommendations for further action, suggestions for future research, and a summary of conclusions.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between CRM system usage, customer satisfaction, and gross revenue. This section includes a brief overview of the study, a discussion on the presentation of findings, and suggestions for applications to professional practice. The study concludes with recommendations for future research, reflections on the research process, and a final summary.

In brief, the analysis results required a rejection of the null hypothesis for both research questions. The first null hypothesis stated that there is no relationship between CRM system usage and gross revenue in the industrial service industry. The study results indicated that CRM operational use did have a significant and positive relationship to gross revenue. Similarly, the null hypothesis for the second research question stated that there is no relationship between customer satisfaction and gross revenue in the industrial service industry. The analysis indicated that customer satisfaction had a significant and negative impact on gross revenue. Both customer satisfaction and CRM use have a predictive influence on gross revenue in the industrial service sector. However, CRM use has a more significant and positive impact.

Presentation of the Findings

The presentation of findings includes a discussion of the statistical tests conducted for this analysis including the descriptive statistics, testing of assumptions, inferential statistical results, and a summary of the findings. It is important to note that bootstrapping

was not required to combat any potential violation of assumptions during the regression analysis. The analysis ran with and without bootstrapping show nearly identical results. Therefore, the following discussion includes only the standard results without bootstrapping.

Descriptive Statistics

Company XYZ has 203 service branches in North America, which makes up the study population. From the total population, I eliminated 25 branches from the study for missing data from one or multiple study variables. The data eliminations resulted in 178 records for use in the regression analysis.

The use of cluster sampling in this study required a minimum of six territories and four service branches from each territory. A power analysis conducted prior to data collection required at least 68 records for valid results. The actual data collection exceeded the minimum requirements by a larger margin. This study included data collected from 15 different territories. The territory with the fewest branches had six involved in the study, with the average number of branches at 12. Additionally, the service director from XYZ company provided data from 178 branches, more than doubling the required amount. Table 2 provides the descriptive statistics for the study variables.

Table 2

Means (M) and Standard Deviations (SD) for Study Variables (N = 178)

Variable	<i>M</i>	<i>SD</i>
Gross Revenue ^a	3685.70	2618.86
Customer Satisfaction ^b	80.38	5.51
CRM Use ^c	119.83	160.92

Note. ^a Gross branch revenue in thousands of dollars

^b NPS measure in percent

^c Count of CRM contacts logged

Tests of Assumptions

Regression analysis requires testing for five basic assumptions including multicollinearity, the normality of error, homoscedasticity, linearity, and independence of errors. There were no major violations of assumptions in this study. A detailed discussion of assumption testing follows prior to a description of the regression results.

Multicollinearity. The most common approach to evaluating multicollinearity is by examining the correlation coefficients and the variance inflation factor (*VIF*). Table 3 contains the correlation coefficients and *VIF* values for this study. Fritz and Morris (2012) stated that a small correlation is less than .10, a medium correlation is less than .30, and a larger correlation is greater than .50. The independent variables of customer satisfaction and CRM use showed only small to medium correlation and within acceptable limits for this study. Similarly, the *VIF* is very close to 1.0 showing that almost no correlation exists between the independent variables.

Table 3

Study Variable Correlation Coefficients and VIFs

Variable	Gross revenue	Customer satisfaction	CRM use	VIF
Gross revenue	1.000	-.275	.526	-
Customer satisfaction	-.275	1.000	-.252	1.068
CRM use	.526	-.252	1.000	1.068

Outliers, normality, linearity, homoscedasticity, and independence of residuals. I evaluated outliers, normality, linearity, homoscedasticity, and independence of residuals by examining the Normal Probability Plot (P-P) of the regression standardized residual and a scatterplot of the standardized residuals. Figures 2 and 3 show the normal probability plot and the scatter plot respectively. An examination of both plots showed that there were no major violations of the regression assumptions.

Figure 2 shows that the standardized residuals tended to follow a straight line diagonally from the bottom left to the upper right. The fact that the residuals follow a somewhat straight-line provides evidence that the assumption of normality has not be grossly violated. A quick inspection of Figure 2 supports the assumption of normally distributed residuals.

I evaluated the remaining assumptions including outliers, linearity, homoscedasticity, and independence of residuals by using the scatterplot of the standardized residuals. No pattern is evident in the data, and the residuals tend to have a

linear relationship centered around a mean of zero. Therefore, there are no indications of the remaining assumptions violations. There was no need to use bootstrapping since there were no major violations of assumptions

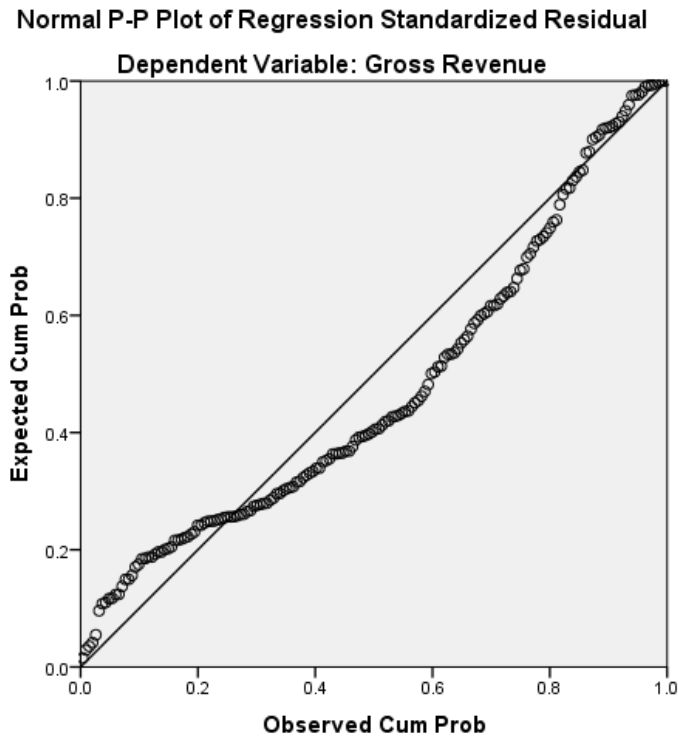


Figure 2. Normal probability plot (P-P) of the regression standardized residuals.

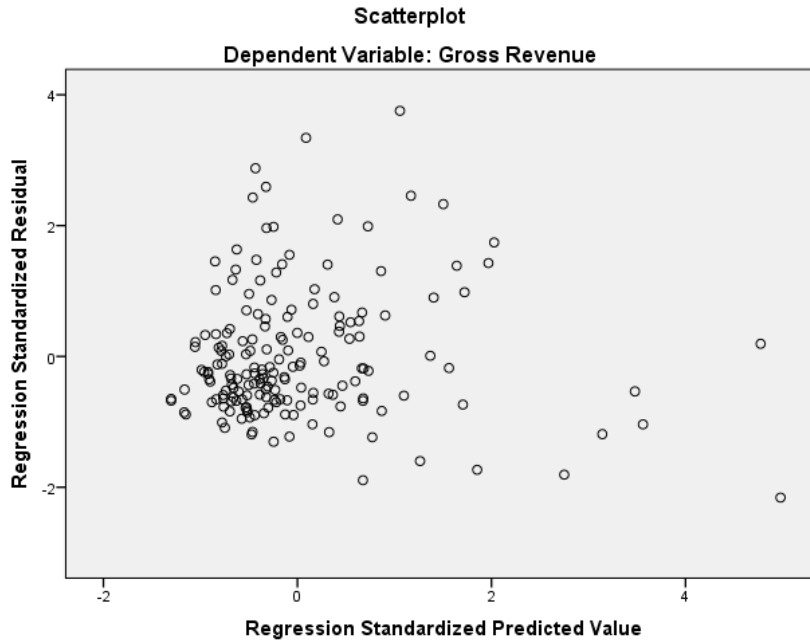


Figure 3. Scatterplot of the standardized residuals.

Regression Analysis Results

I used standard multiple regression, $\alpha = .05$ (two-tailed), to examine the ability of CRM system use and customer satisfaction to predict gross revenue for service branches in a North American industrial service company. The independent variables in the study were CRM system use and customer satisfaction. The dependent variable was gross revenue at the service branch. The null hypothesis was that there is no relationship between CRM system use, customer satisfaction, and gross revenue. The detailed research questions, null and alternate hypothesis are as follows.

RQ-1: What is the relationship between CRM system usage and gross revenue in the industrial service industry?

H_{10} : There is no relationship between CRM system usage and gross revenue in the industrial service industry.

$H1_a$: There is a relationship between CRM system usage and gross revenue in the industrial service industry.

RQ-2: What is the relationship between customer satisfaction and gross revenue in the industrial service industry?

$H2_o$: There is no relationship between customer satisfaction and gross revenue in the industrial service industry.

$H2_a$: There is a relationship between customer satisfaction and gross revenue in the industrial service industry.

A preliminary analysis of multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals showed no serious violations of the regression assumptions. The regression analysis showed that the model was able to significantly predict gross revenue, $F(2,175) = 37.321, p < .001, R^2 = .298$. The R^2 value suggests that the linear combination of the predictor variables CRM use and customer satisfaction accounts for approximately 30% of the variation in gross revenue. Both CRM use and customer satisfaction were statistically significant in the model. CRM use ($beta = .488, p < .001$) provided a higher contribution to the model than customer satisfaction ($beta = -.152, p = .021$). Additionally, CRM use showed a positive contribution to the model as compared to customer satisfaction that was slightly negative. The numerical predictive equation from the regression analysis is

$$Y = 8535.924 + 7.940 X_1 - 72.181X_2$$

Where,

$Y = \text{Gross Revenue}$

$X_1 = CRM \text{ usage}$

$X_2 = Customer \text{ satisfaction}$

The negative slope of customer satisfaction (-72.181) as a predictor of gross revenue indicates a 72.181 decrease in gross revenue for a one-point increase in customer satisfaction. The negative slope of customer satisfaction indicates that gross revenue decreases as customer satisfaction increases. The squared semipartial coefficient (sr^2) was .022, which indicates that while controlling CRM use, customer satisfaction uniquely accounts for approximately 2% of the variance in gross revenue.

The positive slope for CRM use shows that there was a 7.940 increase in gross revenue for each one-unit increase in CRM use. Therefore, the positive slope indicates that gross revenue increases as CRM use increases. The squared semipartial coefficient (sr^2) was .223, which indicates that while controlling for customer satisfaction, CRM use uniquely accounts for approximately 22% of the variance in gross revenue.

Table 4

Regression Analysis Summary for Predictor Variables

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Constant	8535.924	2538.604		3.362	.001
Customer satisfaction	-72.181	31.079	-.152	-2.322	.021
CRM use	7.940	1.065	.488	7.457	<.001

Note. $N = 178$.

Analysis summary. The purpose of this study was to examine the ability of customer satisfaction and CRM use to predict gross revenue for industrial service

companies in North America. The analysis method used in this study was a standard multiple regression. Customer satisfaction and CRM use were the independent variables, and gross revenue was the dependent variable. There were no major violations of the standard regression assumptions noted. The regression model was able to significantly predict gross revenue, $F(2,175) = 37.321, p < .001, R^2 = .298$. Both customer satisfaction and CRM use proved useful in predicting gross revenue. The conclusion from this analysis is that a significant correlation exists between the predictor variables of customer satisfaction, CRM use, and the dependent variable of gross revenue.

Impact on the Service-Profit Chain

The service-profit chain provided the theoretical framework for this study. Heskett et al. (1994) developed the initial service-profit chain that linked employee satisfaction and customer satisfaction to company revenue. Evanschitzky et al. (2012) extended the traditional view of the service-profit chain to include operational investments and replace revenue with operating profits. The model I used in this study replaced operational investments in Evanschitzky's model with CRM use. Additionally, I went back to Heskett's use of revenue as the financial measure and excluded employee satisfaction.

The basic tenant of the service-profit chain states that support services and systems that enable employees to provide value to customers result in employee satisfaction (Heskett et al., 1994). Employee satisfaction drives customer satisfaction, which then drives profitability (Heskett et al., 1994). Therefore, it is reasonable to extend that CRM systems allow employees to provide services to customers more effectively

and efficiently. The use of CRM systems would then provide value to employees and customers resulting in improved satisfaction for both. The application of the service-profit chain to this study led to an improved understanding of how CRM use and customer satisfaction impacts gross revenue in an industrial service business. The application of the service-profit chain to business practice related to CRM investment and use provides a more comprehensive approach to predicting revenue in an industrial service business.

The results of the regression analysis showed that a linear combination of CRM use and customer satisfaction explained 30% of the variation in gross revenue. Therefore, other factors must account for the remaining 70%. Scholars and business professionals have long understood that factors such as product quality, price, and availability were key factors in financial performance. O’Cass and Ngo (2011) found that factors such as product performance, pricing, relationships, and cocreation of value could explain up to 45% of the variation in the company’s financial performance. Regardless of the other factors that may impact revenue in the service industry, the model used in this study was able to explain approximately 30% of the overall revenue variation.

One of the more interesting findings in this study was the fact that customer satisfaction only accounts for 2% of the variation in gross revenue and the linear relationship between customer satisfaction and gross revenue was negative. Much of the literature on customer satisfaction agrees that there is typically a strong positive relationship between customer satisfaction and performance (Steven et al., 2012). Williams and Naumann (2011) found that improved customer satisfaction levels

produced better average total revenue per account and an increase in revenue growth rate per account. However, there is a multitude of additional studies that show mixed results (Terpstra & Verbeeten, 2014). There may be three possible explanations for the results in customer satisfaction.

The first explanation of the unexpected results in customer satisfaction is the impacts of time lags. The data for customer satisfaction in this study was for the same 12-month period as gross revenue. Other researchers have found that gross revenue changes lag customer satisfaction changes by one-quarter to two years (Steven et al., 2012; Terpstra et al., 2012). Additionally, Terpstra et al. (2012) found that the relationship between customer satisfaction and revenue is better described by a logarithmic relationship. Since there was no time lag effects or data transformation used in this study, it is possible that the analysis did not show the full impact of customer satisfaction on revenue.

The second factor affecting the customer satisfaction results in this study is relative scores. The customer satisfaction data collected for company XYZ in this study was relatively high. Company XYZ had an average score of approximately 80% out of a possible 100% using the NPS scale. Additionally, there was very little variation in the scores with a standard deviation of 5.5. Steven et al. (2012) found that at higher levels of customer satisfaction changes in performance would be less significant due to lower marginal returns. Steven et al. (2012) had a somewhat similar result to this study in that performance changes tended to level off at approximately 80%. Therefore, it is possible

and even likely; that company XYZ has achieved a mature customer satisfaction score and the impact of variation from branch to branch is minimal on gross revenue.

The third factor that may be influencing the customer satisfaction results in this study is the choice of revenue as the dependent variable. The use of revenue is common in the literature but may contribute to the conflicting results (Terpstra et al., 2012). Williams and Naumann (2011) suggested that other financial measures such as profit, stock price, P/E ratio, and cash flow may be a more appropriate financial measure to judge performance when looking at the relationship to customer satisfaction. Steven et al. (2012) also stated that much of the studies that show a positive correlation between customer satisfaction and performance used profitability as the financial measure. Satisfied customers may be willing to pay a premium to do business with a firm or continue with future purchases. Anticipating the future behavior of customers may also add to the time lag theory already discussed. Therefore, using a profitability measure such as profits before interest and taxes (PBIT) may have yielded different results.

The most significant contribution of this study was the findings related to CRM use on gross revenue. CRM use accounted for 22% of the variation in gross revenue with a positive relationship. The usage results indicate that as CRM use increased so did revenue. I did not find any other studies that looked at the operational use of CRM systems and their impact on financial performance. However, there were similar studies that used other variables related to CRM. For example, Evanschitzky et al. (2012) proposed operational investments as an input to the service-profit chain. Operational investments could include investments in information technology such as knowledge

management or CRM applications. Similarly, Law et al. (2013) investigated CRM implementation and data utilization but failed to take a transactional view of customer contacts. This study adds to the body of knowledge by providing evidence of the positive relationship between CRM system use and company revenue in the industrial service sector in North America.

There may be multiple reasons that CRM use has a positive impact on firm performance. Josiassen et al. (2014) noted that existing research shows that companies that utilize CRM system have more frequent customer communication, provide timely feedback, and provide customized offerings. Each time a company communicates with a client, they are increasing their chance for additional revenue opportunities. Steel, Dubelaar, and Ewing (2013) found the CRM impact on performance is industry specific. The company that provided the data for this study is in the industrial service sector and is similar in operations to many automotive manufacturers. Chougule et al. (2013) used new product quality data as described by field failure reports and linked resolution of these issues to performance. Company XYZ uses their CRM system to track and escalate field failures in effort to provide rapid resolution of customer complaints. Assuming they are successful in resolving issues to the client's satisfaction, they are creating more positive customer experiences. Frequent positive contacts results in repeat business and more revenue. The outcome of this study related to CRM use matches the anticipated results.

Applications to Professional Practice

The most significant contribution of this study to business practice is furthering the understanding of how the operational use of CRM systems contributes to the financial

performance of the organization. Business executives are very clear on the cost of implementing CRM systems. However, executives are less clear on how CRM affects the bottom line long-term. For example, Gartner estimated that US companies spent \$13 billion on CRM technologies in 2012 (Padilla-Melendez & Garrido-Moreno, 2013). With such a large investment, business leaders expect a significant return. Without a clear method to tie CRM use to financial results, business leaders were unable to link CRM investment to a financial return. Many business leaders formed the opinion that CRM systems are more likely to fail than produce any tangible business benefit (Shafia et al., 2011). This study provides some insight to service managers and business executives as to how the long-term use of CRM can positively contribute to the firm's financial performance. The information in this study can help executives develop investment models for CRM system that will allow them to compare CRM investment to other types of investment. The results of this study will put CRM investment decisions on par with other strategic investments and allow business leaders to make sound financial decisions.

Josiassen et al. (2014) stated that many firms invested in CRM systems with a hope that it would help them improve service, enhance customer retention, and increase financial performance. The results of this study confirmed that CRM use is a significant contributor to service branch revenue. Business executives must look beyond the initial CRM investment and understand the benefits of a long-term CRM strategy. Lee et al. (2010) found that CRM benefits companies through an improved market share, cost reduction, customer satisfaction, and supply chain integration. However, to realize these benefits, managers must make two major commitments. First, companies must implement

the business process reengineering required to take full advantage of their CRM investment. Many CRM implementations fail because of the lack of business process reengineering (Vella & Caruana, 2012). Secondly, managers must implement CRM use into the daily tasks of their operation. This study has shown that the regular use of CRM has a positive impact on company financial performance.

Many studies have reported on the positive relationship between customer satisfaction and financial performance (Terpstra et al., 2012). These results have driven business leaders to invest heavily in customer satisfaction. There may be a point of diminishing returns where further investment does not provide a benefit. The results of this study tend to agree with Steven et al. (2012) who found that additional changes in customer satisfaction have a less significant impact on the business when the business already has high levels of customer service. It is interesting to note that both Steven's et al. study and this study showed that the optimum level of customer satisfaction scores is approximately 80%. The study results do not suggest that customer satisfaction is not important. However, there does appear to be a point where further investment provides little benefit. The learning for business leaders is that once they reach this optimum level of customer satisfaction, they should focus their investment in other areas.

Implications for Social Change

During the recent financial crisis, organizations realized the benefits and the need for continued investment in corporate social responsibility (Giannarakis & Theotokas, 2011). Corporate social responsibility (CSR) provides numerous benefits to organizations that outlive difficult economic times. For example, Strugatch (2011) identified several

benefits of CSR including more environmentally friendly processes, better product quality, improved financial disclosures, community support, and more opportunities for minorities. Anything that improves a company's financial position improves their ability to invest in CSR.

This study identified two areas where businesses can increase their financial performance and provide funding to CSR efforts. First, this study showed that the operational use of CRM had a positive impact on revenue. Additional revenue provides companies with the opportunity to invest in new projects including CSR projects. Secondly, this study showed that additional investment in customer satisfaction projects beyond a particular point does not necessarily improve financial performance. Managers can divert some of the funding designated for customer satisfaction projects to CSR projects. Diverting funding has the additional benefit of not needing additional revenues to support the work. Malik (2015) found that funding CSR projects provided several significant benefits to organizations including enhancing firm value, promoting employee productivity, improving operating performance, expanding markets, better use of capital budgeting, improving the firm's overall reputation, and improving relationships with all stakeholders.

CRM usage allows companies to improve customer relationships through cause-related marketing. Scholars have defined cause-related marketing as actions by a group to further the social good above those actions required by law (Jeong, Paek, & Lee, 2013). Businesses can increase their CRM usage and contact with customers by engaging in cause-related marketing. For example, CRM systems can aid in cause promotion, cause

marketing efforts, corporate social marketing, corporate philanthropy, volunteering, and social business communication (Jeong et al., 2013). Engaging in cause-related marketing through a CRM system allows the company to maximize the utilization of an existing investment, increase customer contact, find new potential revenue opportunities, and build stronger relationships with their customers.

This study contributes to positive social change in three ways. First, it identified opportunities for companies to improve financial performance, which provides additional funding for CSR projects. Additionally, this study identified a chance to divert existing funds to CSR projects. Lastly, companies can increase the impact of the CSR activities through the increased utilization of the CRM system in cause-related marketing efforts.

Recommendations for Action

The results of this study have led me to make the following recommendations to business leaders who are considering the implementation of a CRM system. The first recommendation is to consider the full scope of a successful CRM implementation. Consideration of a CRM implementation should start with a thorough understanding of what a CRM system is and is not. A CRM system is not merely an information technology platform used by customer-facing employees. CRM is a much broader concept that utilizes technology, but more importantly; CRM combines people and business process re-engineering to maximize the benefits of customer relationships. Therefore, business leaders not only need to consider and plan the information technology portion of their implementation, but they must also plan to retrain employees, and engage in full-scale business process reengineering.

My next recommendation is that business leaders appoint a sponsor for any CRM initiative from the board of directors. A high-ranking sponsor in the organization can help get resources assigned to the project and guide the organization through the difficult changes that must occur in any business process reengineering project. The sponsor must oversee several aspects of work including communicating project vision, gaining top management support, driving business process reengineering, obtaining resources to support the work and training of employees.

After implementation, managers need to employ a robust set of measures that will ensure employees are fully utilizing the CRM system to achieve the intended results. The most advanced and robust systems are of no use if they are never used. The CRM balanced scorecard provides some of the most comprehensive and useful measures of CRM use and effectiveness. The balanced scorecard includes measures on organizational performance, operational measures related to customer service, marketing effectiveness, and the utilization of internal resources. Regardless of the process used to collect metrics, managers must create a key measure around the use of CRM resources.

Measuring CRM utilization is still not sufficient to achieve success. Therefore, I would recommend that managers engrain CRM principles in the organization through sustained programs of training and incentivizing employees. Leaders must provide initial training for employees, but they must also monitor performance and ensure employees have the ongoing support they need to guarantee success. In many cases, leaders need to enact a business culture change to engrain CRM principles into the core values of the organization.

The last recommendation is that companies consider the long-term use of CRM when making strategic decisions, particularly when those decisions concern investment in customer service activities. The key finding of this study was that the increased operational use of CRM provides positive financial benefits for the company. Financial managers and business leaders need to consider the long-term benefits of CRM when comparing CRM investment with other projects competing for the same resources. In conjunction with this, business leaders should consider diverting resources to other projects when they have achieved optimum levels of customer service.

Recommendations for Further Research

During the completion of this research, I identified several opportunities for additional research. Many of the opportunities center around further research on the impact of CRM on financial performance. The first recommendation is to repeat this study using profitability as the financial measure instead of revenue. Although there are many other factors that affect profitability, previous studies in other industries have established relationships between CRM implementation and firm profitability. Next, future scholars should repeat this study and include a variable for employee satisfaction. Adding employee satisfaction would test all of the original variables of the service-profit chain.

I would also recommend a long-term data collection effort to understand the impact of time lags in the model identified in this study. Other studies have suggested that any changes in performance lags CRM changes by up to two years. To date, there are no studies that provide insights on the impact of time lags with CRM use. Additionally,

future scholars should conduct a more comprehensive study that looks at all factor known to affect firm profitability. Other studies that have looked at profitability failed to consider CRM use. The last recommendation is that other scholars replicate this research in additional markets to ensure the results apply broadly.

Reflections

I found the DBA doctoral study process to be challenging, enlightening, and rewarding. Despite best efforts, I underestimated the amount of time and effort that would go into the research process. I had to overcome several personal challenges not the least of which was academic writing at the doctoral level. However, this has been one of the most rewarding learning experiences of my career.

Since I have worked in customer support for much of my career, I have developed several assumptions related to customer service and CRM systems. Some of these assumptions are what lead me to pursue this research topic. I assumed that the use of CRM provided tangible benefits to organizations that utilized them. However, I lacked the evidence to support this assumption until this project. This study helped me confirm that CRM use provides a positive financial benefit.

I had also assumed that customer satisfaction was the most important focal point for any company. I had to reevaluate that assumption based on the results of this study and a review of the literature on the topic. I learned that there was an optimum level of customer satisfaction beyond which companies seen no additional benefits. Based on this finding, I now believe that companies should monitor customer satisfaction for this level

and once they reach it, do what is needed to maintain, and then divert additional resources to other more value-added projects.

Summary and Study Conclusions

The purpose of this study was to examine the relationship between CRM system use, customer satisfaction, and gross revenue. There were two research questions. The first research question asked what the relationship was between CRM system usage and gross revenue. The second research question asked what the relationship was between customer satisfaction and gross revenue. I used a quantitative correlational study design using multiple linear regression to analyze the relationship between the independent variables of CRM use and customer satisfaction, to the dependent variable of gross revenue.

From the results of this study, I was able to conclude that CRM use and customer satisfaction are significant predictors of revenue for companies in the industrial service sector with service branches in North America. CRM system use was the most significant predictor of revenue with a positive relationship. Additionally, I found that there are optimum levels of customer satisfaction above which companies find little additional benefit. The results of this research are important for business leaders in the service sector. This research will allow managers to use net present value type calculations to compare CRM investment on par with other investments. This research will enable managers to make better strategic decisions with their limited investment dollars. I offered several recommendations for improvements to business practices that will help

companies improve financial performance and successfully implement CRM systems.

Finally, I recommended several opportunities for further research.

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Appendix A: Data Use Agreement

Data Use Agreement

This Data Use Agreement (“Agreement”), effective as of January 1st, 2015 (“Effective Date”), is entered into by and between Robert Simmons (“Data Recipient”) and Cummins Inc. (“Data Provider”). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set (“LDS”) for use in research in accord with the HIPAA and FERPA Regulations.

Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the “HIPAA Regulations” codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.

Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations

Data Fields in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). In preparing the LDS, Data Provider shall include the **data fields specified as follows**, which are the minimum necessary to accomplish the research: unique record number, branch CRM use (count), branch revenue results, and customer satisfaction results for a 12-month period.

Responsibilities of Data Recipient. Data Recipient agrees to:

- Use or disclose the LDS only as permitted by this Agreement or as required by law;
- Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;
- Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;
- Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and
- Not use the information in the LDS to identify or contact the individuals who are data subjects.

Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its Research activities only.

Term and Termination.

Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.

Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

Miscellaneous.

Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER

Signed:

 5/14/2015

Print Name:



Print Title:

DATA RECIPIENT

Signed:

 5/14/2015

Print Name: Robert Simmons

Print Title: Student Researcher

Appendix B: SPSS Output

Descriptive Statistics

	Mean	Std. Deviation	N
TotalRev	3685.703	2618.8625	178
CustSat	80.376	5.5131	178
CRMUse	119.826	160.9173	178

Figure B1. SPSS descriptive statistics output.

Correlations

		TotalRev	CustSat	CRMUse
Pearson Correlation	TotalRev	1.000	-.275	.526
	CustSat	-.275	1.000	-.252
	CRMUse	.526	-.252	1.000
Sig. (1-tailed)	TotalRev	.	.000	.000
	CustSat	.000	.	.000
	CRMUse	.000	.000	.
N	TotalRev	178	178	178
	CustSat	178	178	178
	CRMUse	178	178	178

Figure B2. SPSS correlations table.

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	CRMUse, CustSat ^b	.	Enter

a. Dependent Variable: TotalRev

b. All requested variables entered.

Figure B3. SPSS variables entered/removed.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.546 ^a	.298	.290	2205.9548	.298	37.231	2	175	.000	1.918

a. Predictors: (Constant), CRMUse, CustSat

b. Dependent Variable: TotalRev

Figure B4. SPSS model summary.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	362352548.3	2	181176274.1	37.231	.000 ^b
	Residual	851591426.2	175	4866236.721		
	Total	1213943974	177			

a. Dependent Variable: TotalRev

b. Predictors: (Constant), CRMUse, CustSat

Figure B5. SPSS ANOVA table.**Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	8535.924	2538.604		3.362	.001	3525.703	13546.144						
	CustSat	-72.181	31.079	-.152	-2.322	.021	-133.519	-10.842	-.275	-.173	-.147	.936	1.068	
	CRMUse	7.940	1.065	.488	7.457	.000	5.839	10.042	.526	.491	.472	.936	1.068	

a. Dependent Variable: TotalRev

Figure B6. SPSS coefficients table.**Coefficient Correlations^a**

Model			CRMUse	CustSat
1	Correlations	CRMUse	1.000	.252
		CustSat	.252	1.000
	Covariances	CRMUse	1.134	8.342
		CustSat	8.342	965.921

a. Dependent Variable: TotalRev

Figure B7. SPSS coefficient correlations.**Collinearity Diagnostics^a**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	CustSat	CRMUse
1	1	2.472	1.000	.00	.00	.06
	2	.526	2.168	.00	.00	.86
	3	.002	33.882	1.00	1.00	.08

a. Dependent Variable: TotalRev

Figure B8. SPSS collinearity diagnostics.

Casewise Diagnostics^a

Case Number	Std. Residual	TotalRev	Predicted Value	Residual
65	3.755	13480.5	5196.881	8283.6011
137	3.342	11183.3	3811.697	7371.6490

a. Dependent Variable: TotalRev

Figure B9. SPSS case wise diagnostics.

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1823.097	10809.758	3685.703	1430.8003	178
Residual	-4760.6250	8283.6006	.0000	2193.4564	178
Std. Predicted Value	-1.302	4.979	.000	1.000	178
Std. Residual	-2.158	3.755	.000	.994	178

a. Dependent Variable: TotalRev

Figure B10. SPSS residuals statistics.

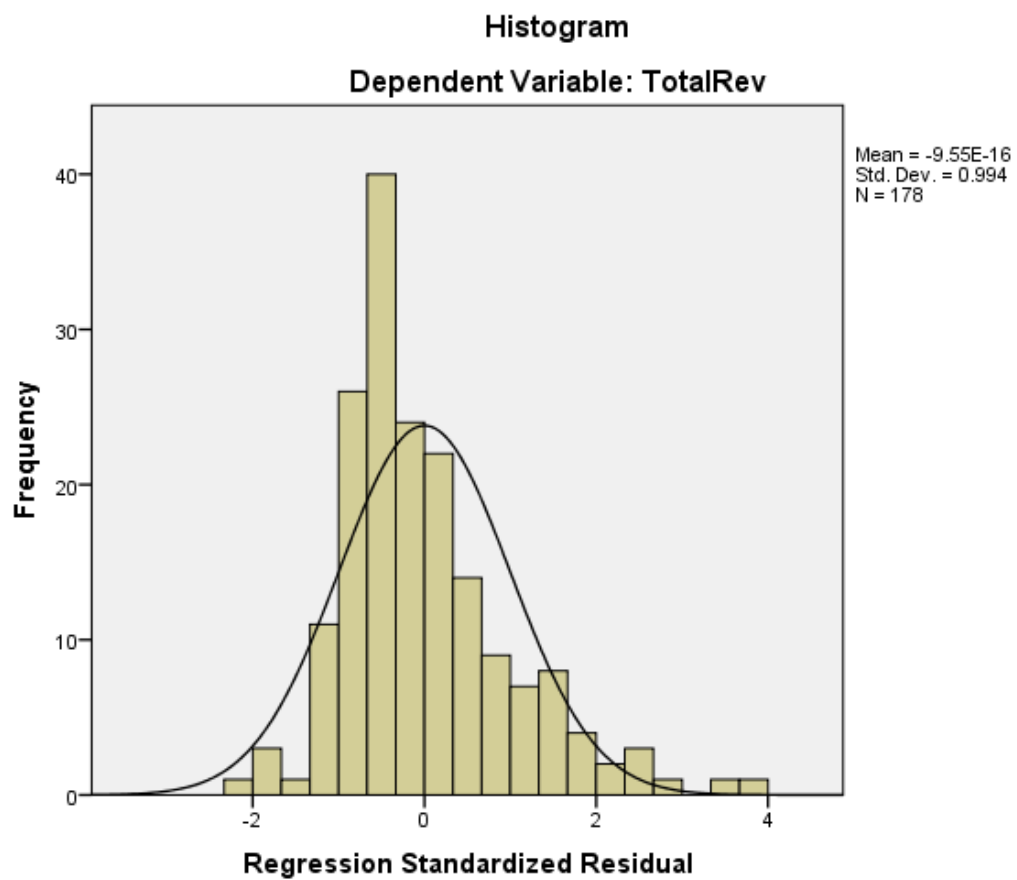


Figure B11. SPSS residual histogram.

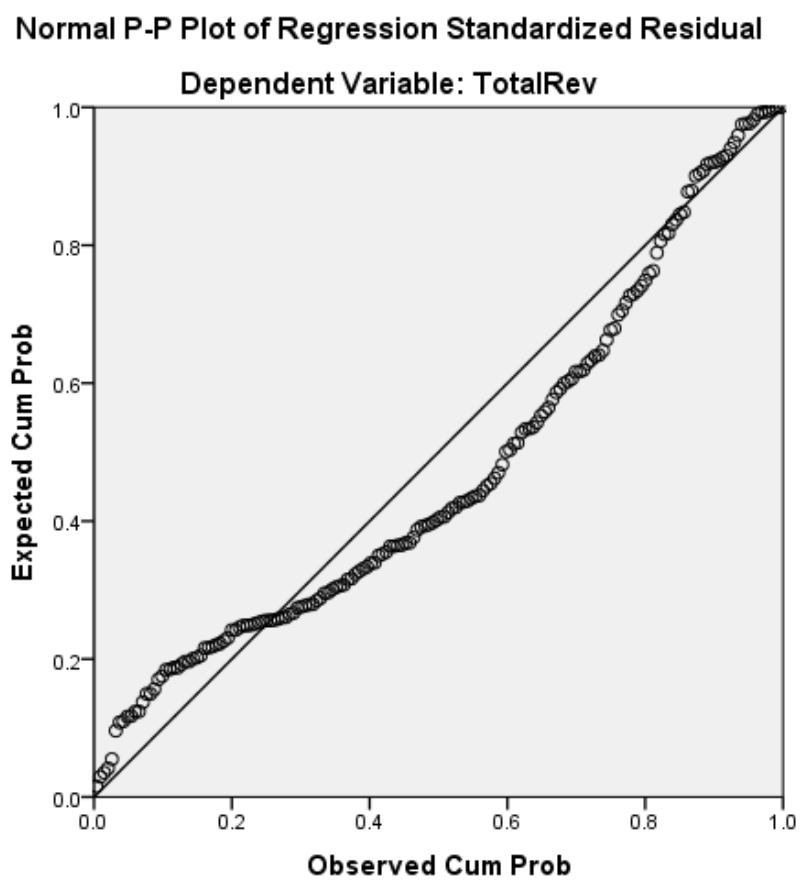


Figure 12. SPSS residual normal plot.

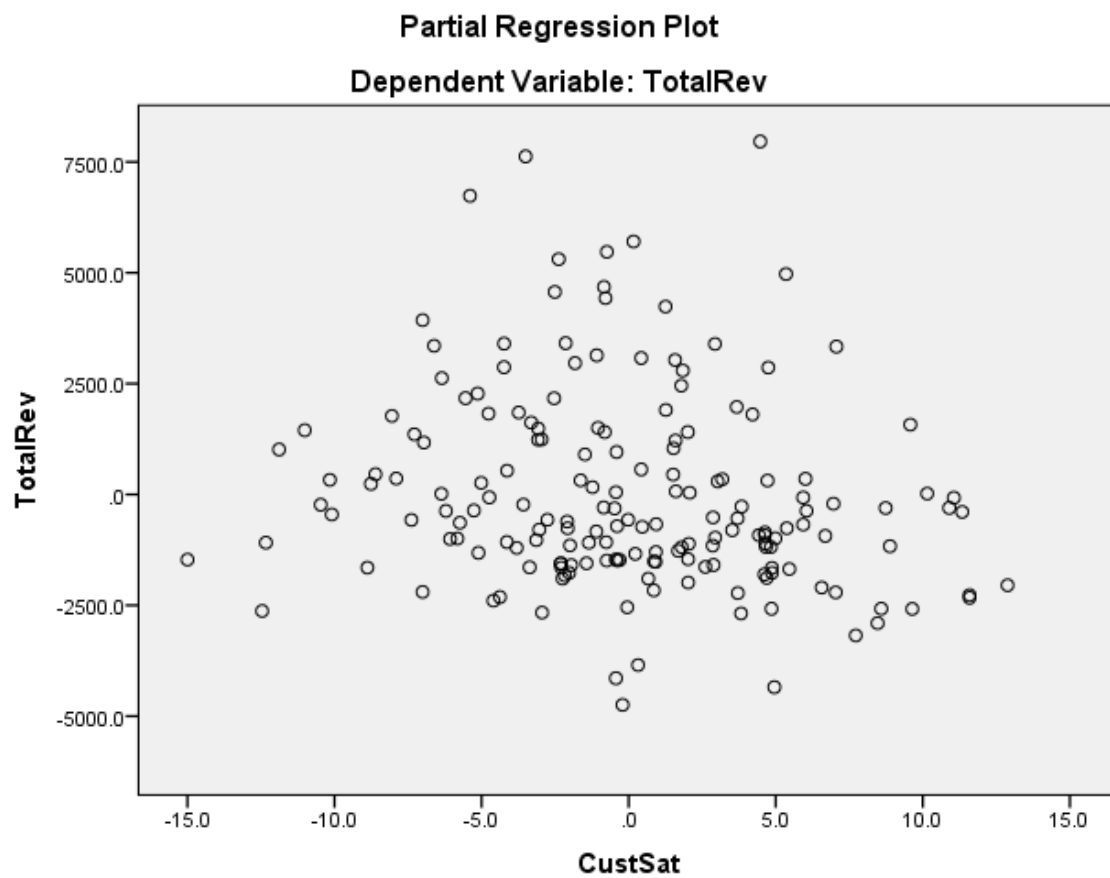


Figure B12. SPSS residual scatterplot (customer satisfaction).

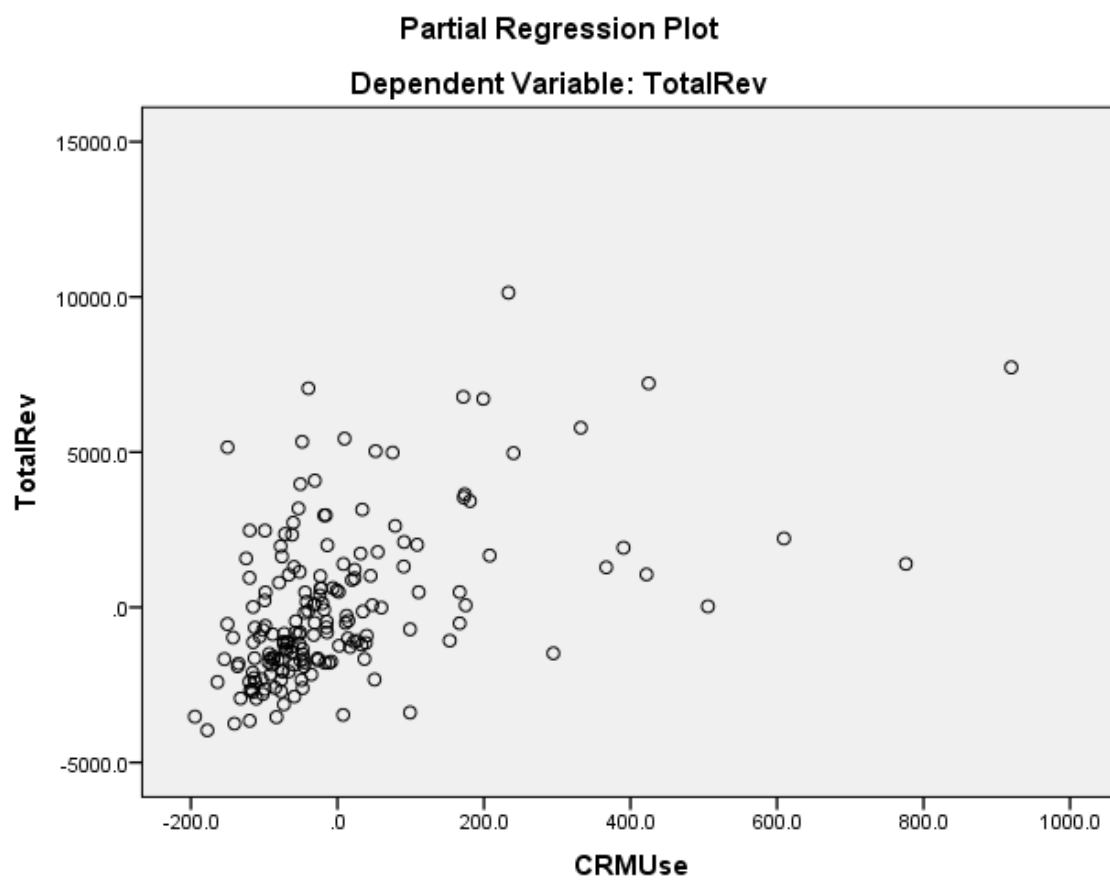


Figure B13. SPSS residual scatterplot (CRM use).