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# Contact Center Employee Characteristics Associated with Customer Satisfaction

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This is to certify that the doctoral study by

Lara Pow

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
2017

Abstract

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MSc, University of Northern British Columbia, 2002

BSc, University of Northern British Columbia, 1999


Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration


Walden University

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Abstract

The management of operations for a customer contact center (CCC) presents significant challenges. Management's direction is to reduce costs through operational efficiency metrics while providing maximum customer satisfaction levels to retain customers and increase profit margins. The purpose of this correlational study was to quantify the significance of various customer service representative (CSR) characteristics including internal service quality, employee satisfaction, and employee productivity, and then to determine their predictive ability on customer satisfaction, as outlined in the service-profit chain model. The research question addressed whether a linear relationship existed between CSR characteristics and the customers' satisfaction with the CSR by applying ordinary least squares regression using archival dyadic data. The data consisted of a random sample of 269 CSRs serving a large Canadian bank. Various subsets of data were analyzed via regression to help generate actionable insights. One particular model involving poor performing CSRs whose customer satisfaction was less than 75% top box proved to be statistically significant ($p = .036$, $R^2 = .321$) suggesting that poor performing CSRs contribute to a significant portion of poor customer service while high performing CSRs do not necessarily guarantee good customer service. A key variable used in this research was a CSR's level of education, which was not significant. Such a finding implies that for CCC support, a less-educated labor pool may be maintained, balancing societal benefits of employment for less-educated people at a reasonable service cost to a company. These findings relate to positive social change as hiring less-educated applicants could increase their social and economic status.

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Dedication

I would like to dedicate this study to my husband, Devon. His patience, understanding, and support helped me get through the many years it took to complete this study. In addition, I would like to dedicate this work to my parents, Mark and Luby. They instilled a belief in me at a young age that I could do whatever I put my mind to and encouraged me to gain knowledge and pursue excellence.

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Section 1: Foundation of the Study

A customer contact center (CCC), also called a contact center or customer service center, is a center equipped to handle large amounts of customer telephone requests for an organization from a single facility. In addition to telephone calls, a CCC will also handle other types of customer communications such as email, web requests, and live chat. A CCC is equipped to route communication requests to the appropriate first tier customer service representative (CSR) employees within an organization as well as escalate customer requests to higher tiers for resolution.

The directive for all CSRs is to satisfy the service needs of customers. The directive for CCC management is to maximize the quality of customer support rendered while balancing service costs (van Dun, Bloemer, & Henseler, 2012). A key driver that helps achieve this balance is to attract, train, and retain quality CSRs. The need for quality CSRs exists as the CCC industry experiences extremely high frontline employee turnover with annualized turnover rates as high as 20% to 40% (van der Aa, Bloemer, & Henseler, 2012; van Dun et al., 2012). It is difficult to satisfy customers when potentially the entire frontline staff in the CCC renews every 3 to 5 years. Contact center industry observations also indicate that dissatisfied CSRs become apathetic and disinterested in customer care, especially when approaching turnover decisions. Lastly, a key foundation for this study is that many CCCs tend to focus on metrics such as productivity and adherence to schedule to save costs (Ellway, 2014). However, customer satisfaction should be a priority since an organization may spend five to ten times more money to

replace a customer compared to the cost of servicing an existing customer (Tatikonda, 2013).

## Background of the Problem

Customer satisfaction has been a topic of investigation for many years because of the benefits gained from satisfied customers. Service organizations use surveys to measure customer satisfaction as it influences customer attitudes and loyalty and is an indicator of future company profitability (Abbasi & Alvi, 2013). Price and more importantly quality of service are fundamental drivers of customer loyalty in the service industry (Jung & Yoon, 2013).

The focus of this research was on CCCs serving an important and particular industry segment: the banking industry. In this industry, on average and globally, 30% of end customers had changed to another bank within the last 6 to 12 months to experience better pricing, value, and customer service (Accenture, 2015). This loss of customers is a concern as the main revenue for banks comes from recurring monthly charges on accounts. Since improvement on price is finite, improvement with customer service should be a focus for retaining customers, making it helpful to understand how to improve banking customer satisfaction.

Customers resort to using a CCC when they are unable to use self-service contact channels to resolve their problem and thus require expert advice. Therefore, it is necessary to have trained CSRs who can not only defuse a bank's end customer frustration and solve problems to complete satisfaction but do so relatively quickly while avoiding costly escalations to higher CCC service tiers. Only a good CSR can achieve

this task over the many telephone calls received during a workday. Thus, it is important to understand the characteristics of CSRs serving the banking sector that lead to greater end customer satisfaction.

## Problem Statement

Loss of trust in the banking industry has increased competition, making customer satisfaction and loyalty imperative for banks to remain profitable (Marinkovic & Obradovic, 2015). In the United States, 5% of customers terminate the banking relationship with their bank each year resulting in diminished bank balances (Nienaber, Hofeditz, & Searle, 2014). The general business problem was that certain employee characteristics can influence the satisfaction of served customers. The specific business problem was that limited research existed for CCC management on whether the characteristics of a CSR, such as tenure, training hours, empowerment, education, productivity, job satisfaction, and satisfaction with supervisor skills, have a relationship with customer satisfaction.

## Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between customer satisfaction and the specific employee characteristics of tenure, training hours, empowerment, education, productivity, job satisfaction, and satisfaction with their supervisor's skills for CSRs serving the banking industry. This research purpose was achieved through the application of multiple regression. In such a linear regression model, each observation was for a specific CSR. The independent variables included that CSR's job satisfaction, productivity, tenure, education, and the

internal service quality metrics of the CSR's satisfaction with their supervisor's skills, their level of empowerment, and the training they received. The dependent variable was the average customer satisfaction over time with that CSR. The targeted population consisted of customers and CSRs of CCCs servicing such customers for a large Canadian bank. The focus was only on those CSRs working for the CCCs located in Canada. The implications for positive social change included the potential to increase knowledge of the predictors of customer satisfaction, thus demonstrating areas to focus on when hiring CSRs. CSRs generating satisfied customers during transactions can experience less job dissatisfaction and stress, creating amicable calls where CSRs can preserve their dignity and feel worthwhile in their jobs.

## Nature of the Study

A quantitative methodology was the choice for this study. The use of a quantitative methodology is appropriate when trying to determine the effects of a set of independent variables on a dependent variable across a sample to infer or generalize to a larger population (Masue, Swai, & Anasel, 2013). Qualitative research methods are appropriate when trying to determine why or how individuals or similar groups experience specific circumstances (Masue et al., 2013). Qualitative research methods were not suitable for this research study since the purpose was to predict the outcome and not the general reasons why it occurred.

Specifically, the design used in this study was a correlational design. Correlation research is appropriate when trying to illustrate how a set of variables influence the changes in a single variable (Ellis & Levy, 2009). Thus, a correlational design was

applicable because the purpose of this study was to determine the influence on customer satisfaction through variables based on the characteristics of the CSR servicing the customer.

## Research Question

The research in this doctoral study was to answer one key research question. The principal research question was to determine the relationship between customer satisfaction and certain employee characteristics of CSRs. Before stating the research question, it is important to overview the variables used to operationalize the research question into hypotheses. The focus of this study was on seven independent variables to predict the dependent variable, as listed below in Table 1, with five of those independent variables directly measurable and two of those independent variables being complex constructs each assessed separately via simple summative indices on lower-level and directly measurable variables.

Table 1

*Variables in the Research Study*

| Variable identifier | Variable | Data source description[a] | Measurement or calculation |
|---|---|---|---|
| $X_1$ | Employee tenure | Operational HR data | Calculated using employee start date |
| $X_2$ | Training hours | Operational HR data | Measured |
| $X_3$ | Empowerment | SQM Employee survey | Measured |
| $X_4$ | Employee education | SQM Employee survey | Measured |
| $X_5$ | Employee productivity | Operational HR data | Measured |
| $X_6$ | Supervisor skills: communication | SQM Employee survey | Measured |
| $X_7$ | Supervisor skills: commitments | SQM Employee survey | Measured |
| $X_8$ | Supervisor skills: respectful | SQM Employee survey | Measured |
| $X_9$ | Supervisor skills: resolves concerns | SQM Employee survey | Measured |
| $X_{10}$ | Supervisor skills: career development | SQM Employee survey | Measured |
| $X_{11}$ | Supervisor skills: provides feedback | SQM Employee survey | Measured |
| $X_{12}$ | Job satisfaction | SQM Employee survey | Measured |
| $X_{13}$ | Recommending place of work | SQM Employee survey | Measured |
| $X_{14}$ | Proud to work for the company | SQM Employee survey | Measured |
| $X_{15}$ | Not looking for new job | SQM Employee survey | Measured |
| $C_1$ | Employee satisfaction with their supervisor's skills | SQM Employee survey | Calculated using complex construct of $X_6 + X_7 + X_8 + X_9 + X_{10} + X_{11}$ |
| $C_2$ | Employee job satisfaction | SQM Employee survey | Calculated using complex construct of $X_{12} + X_{13} + X_{14} + X_{15}$ |
| $Y$ | Customer satisfaction with the CSR | SQM Customer survey | Measured |

[a]Obtained with appropriate Data Use Agreement.

The overarching research question was as follows:

*RQ*: What is the relationship between a customer's satisfaction with a CSR and the personal characteristics of that CSR?

The answer to the RQ is important because the employer can influence some aspects of the personal characteristics of CSRs. This influence may be through hiring and training practices. Other aspects of influence may be through ongoing monitoring using employee satisfaction surveys. While certain CSR characteristics and the metrics used to assess them can lead to higher customer satisfaction, many managers do not know which specific employee characteristics to focus on to garner the largest gains in customer satisfaction. Customer satisfaction contributes to increased customer loyalty, customer repurchase intentions, and increased organization revenue (Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994).

## Hypotheses

Operationalizing the research question resulted in a number of testable inferential hypotheses related to linear regression. The hypotheses included the pair of null and alternative hypotheses for two overall models. Testing of the hypotheses was at the $1 - \alpha = 95\%$ or at $\alpha = 0.05$ when testing for significance:

### Model 1

$H_{0a}$: The linear combination of tenure, training hours, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction will not significantly predict customer satisfaction.

$H_{1a}$: The linear combination of tenure, training hours, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction will significantly predict customer satisfaction.

**Model 2**

$H_{0b}$: The linear combination of tenure, training hours, empowerment, education, productivity, supervisor skills: communication, supervisor skills: commitments, supervisor skills: respectful, supervisor skills: resolves concerns, supervisor skills: career development, supervisor skills: provides feedback, job satisfaction, recommending, proud to work, and commitment will not significantly predict customer satisfaction.

$H_{1b}$: The linear combination of tenure, training hours, empowerment, education, productivity, supervisor skills: communication, supervisor skills: commitments, supervisor skills: respectful, supervisor skills: resolves concerns, supervisor skills: career development, supervisor skills: provides feedback, job satisfaction, recommending, proud to work, and commitment will significantly predict customer satisfaction.

**Correlation Hypotheses**

For each pair of independent variable $X_i$ or construct $C_i$ and $Y$, the lower level null hypotheses are:

$H_{0i}$: $R(Y \mid X_i) = 0$; independent variable $X_i$ does not significantly predict $Y$.

$H_{0i}$: $R(Y \mid C_i) = 0$; independent variable $C_i$ does not significantly predict $Y$.

For each pair of independent variable $X_i$ or construct $C_i$ and $Y$, the lower level alternative hypotheses are:

$H_{1i}$: $R(Y \mid X_i) \mathrel{!=} 0$; independent variable $X_i$ does significantly predict $Y$.

$H_{1i}$: $R(Y \mid C_i)$ != 0; independent variable $C_i$ does significantly predict $Y$.

**Theoretical Framework**

The theoretical framework for this study was the service-profit chain model first proposed by Heskett, Jones, Loveman, Sasser, and Schlesinger (1994). Heskett et al. (1994) linked organizational performance, customer loyalty, and the employee metrics of satisfaction, loyalty, and productivity in the theoretical model of the service-profit chain. The focus of this doctoral study was a simplified version of the service-profit chain model which helped examine how the services provided by employees influences customer satisfaction. Figure 1 outlines the proposed relationship between internal service quality, employee job satisfaction, employee productivity, and customer satisfaction. Section 2 contains details of this theory.
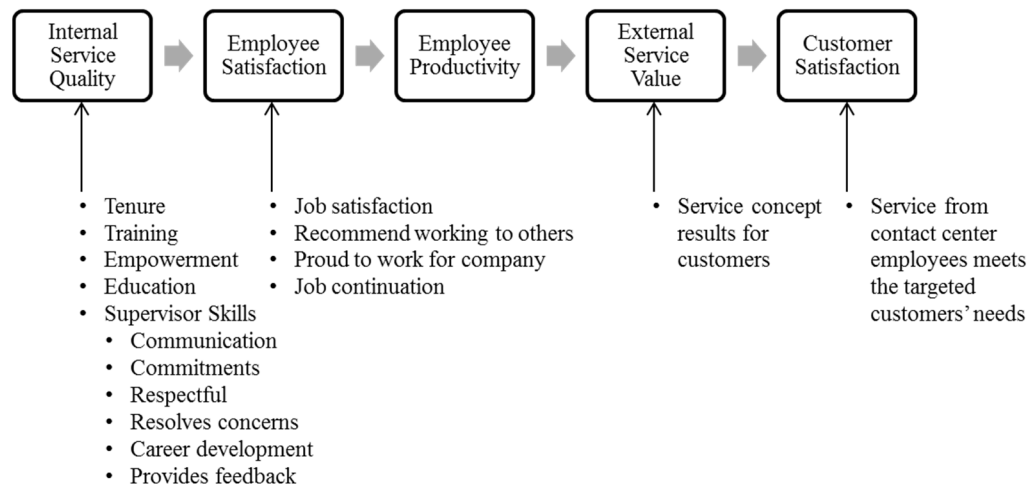


*Figure 1*. Service-profit chain model. Adapted from "Putting the service-profit chain to work," by J. L. Heskett, T. O. Jones, G. W. Loveman, W. E. Sasser, Jr, and L. A. Schlesinger, 1994, *Harvard Business Review, 72*(2), p. 167. Copyright 1994 by *Harvard Business Review*. Reprinted with permission.

**Operational Definitions**

*Customer contact center (CCC):* Integrated centers that offer customer contact using a variety of channels such as telephone, email, online chat, and the web (Fartash & Gharechedaghi, 2012).

*Customer satisfaction:* How a customer feels about service experiences based on the customer's impression of when organizations provide products and services (Grigoroudis, Tsitsiridi, & Zopounidis, 2013).

*Customer service representative (CSR):* A service employee who provides the link between the organization and its customers for transactions, sales, and retention (Choi, Cheong, & Feinberg, 2012).

*Employee job satisfaction:* The pleasure an individual feels about their job or job experiences (Gazzoli, Hancer, & Kim, 2013).

*Internal service quality:* Items in the workplace that measure quality, such as the attributes of the workplace, tools used, hiring and training practices, and recognition and bonus practices for employees (Heskett et al., 1994).

*Service climate:* The beliefs employees have about how customer service is managed and delivered to customers such that an organization ensures the quality of that service (Hong, Liao, Hu, & Jiang, 2013).

*Service quality:* How a customer viewed the overall service provided by an organization, sometimes interchangeable with customer satisfaction (Pantouvakis & Bouranta, 2013).

*Switching costs:* The costs for a customer to switch, or move, services to another organization (Wu, Zhou, & Wu, 2012).

*Top box:* The percentage of respondents who give a top rating of 9 or above out of 10 when responding to a survey question  (van Doorn, Leeflang, & Tijs, 2013).

## Assumptions, Limitations, and Delimitations

### Assumptions

Assumptions are what the researcher can assume as true without confirmation from the research (Ellis & Levy, 2009). Table 2 is a summary of the assumptions pertinent to this research study. The table illustrates the (a) area the assumption is referring to, (b) description of the assumption, (c) justification for the assumption, (d) risks that may occur from making the assumption, and (e) ways to assuage the risk.

Table 2

*Assumptions of the Research Study*

| Category | Description | Justification | Risks | Risk mitigation |
|---|---|---|---|---|
| Theoretical Foundation | The service-profit chain model is the appropriate theory to study the phenomenon. | The model links employee characteristics and internal service quality with the value created for the customer. | Other theoretical models are appropriate. | Ensure assessment of other theoretical possibilities. |
| Phenomenon | Employee characteristics have an effect on customer satisfaction. | Previous literature has shown correlations between employee metrics analyzed in the study. | Results may be inconclusive. | Use of archival data does not allow for risk mitigation. |
| Instrument | The survey designed to collect data is appropriate for the research. | The use of the employee and customer surveys continues in the industry, and both surveys are already valid. | Results may be inconclusive. | Use of archival data does not allow for risk mitigation. |
| Sample Size | The sample size is appropriate for ordinary least squares regression. | G*Power recommends a sample size of 269 with an effect size of 0.15 when using seven independent variables. A sample of 269 employees gives sufficient sample saturation. | Archival data does not allow for a large enough sample. | Use lower effect size if necessary. |
| Methodology | Ordinary least squares regression is appropriate for the research. | All variables are scale and ordinal variables with linear relationships. | Results may be inconclusive. | A review of the research methodology and design is necessary. Testing of these assumptions occurs in Section 3. |
| Analysis | Data analyzed by multiple linear regression has a continuous distribution for each respondent category. | Likert scale items assessed with a simple summative index to treat as scale variables. | Results may be inconclusive. | Testing of these assumptions occurs in Section 3. |
| Significance | Employee metrics affecting customer satisfaction is useful knowledge for contact center management. | The objective of conducting this study is to understand the relationship between employee characteristics and customer satisfaction. | None. | No risk mitigation approach is necessary. |
| Participants | Participants respond to survey truthfully. | A third party conducted the employee and customer surveys, giving assurance of anonymity. | Results may be inconclusive. | Use of archival data does not allow for risk mitigation. |
| Results | The findings from the study will assist contact center management with their strategy for training and coaching CSRs. | Contact centers already focus on all variables in the study to a certain degree. | None. | No risk mitigation approach is necessary. |

**Limitations**

Limitations are items out of the researcher's control that can endanger the repeatability of the study if the researcher does not control for the limitations (Ellis & Levy, 2009). Limitations can help other researchers understand the vulnerabilities in the study and address validity (Brutus, Aguinis, & Wassmer, 2013). Table 3 shows the limitations pertinent to this research study. The table displays the (a) area the limitation is referring to, (b) description of the limitation, and (c) justification for the limitation.

Table 3

*Limitations of the Research Study*

| Category | Description | Justification |
|---|---|---|
| Phenomenon | The aim of the study is to focus on employees with customer satisfaction surveys attributed to said employee to determine whether traits of the employee affect customer satisfaction. The data does not represent all employee factors that affect customer satisfaction. | Use of archival data limits variables used in the study. |
| Instrument | Usage of archival data makes it not feasible to reword questions in the survey. | Usage of the survey continues in its current form in the industry and is already valid. |
| Sample | The sample frame has employee and customer survey participants from only one organization. | The sample frame fulfills the requirements of the study. |
| Participants | a) The employee study was not completely anonymous as employees completed the survey through invitations sent via email. Lack of anonymity may have resulted in certain employees not participating in the study. | a) The study needs employee information matched to customer survey data. Use of reference numbers increased confidentiality of the employee information with corresponding customer data. |
| | b) Participants delimited to employees with customer surveys attributed to the employee in the two months after the employee survey. | b) Customer surveys occurring too long after the measurement of employee characteristics may not show the relationship to measured employee characteristics depending on when measured. |
| Results | A generalization of the findings from the results may not be possible for all CCC industries due to the survey participants being customers and employees from a single organization. | The data is for a CCC in the banking service industry in Canada. Canada and the U.S. are quite similar for CCCs in the banking service industry, allowing for generalization in the U.S. |

**Delimitations**

Delimitations refer to the boundaries of the study regarding what the researcher is specifically studying (Ellis & Levy, 2009). Table 4 shows the delimitations pertinent to this research study. The table displays the (a) area the delimitation is referring to, (b) description of the delimitation, and (c) justification for the delimitation.

Table 4

*Delimitations of the Research Study*

| Category | Description | Justification |
|---|---|---|
| Phenomenon | The aim of the study is to focus only on customers and employees from a single organization with a CCC. | CCCs represent a large portion of jobs in both Canada and the U.S. allowing for generalization to a large proportion of workers. For instance, in the U.S, CSRs working in CCCs represented 12% of the employment for office and administrative support occupations, with a total 2.5 million jobs as CSRs in May 2014 (Bureau of Labor Statistics, 2015). |
| Instrument | Archival data contains surveys conducted in English only. | English is the primary language in Canada and the U.S. Restricting to English reduces the effect of the survey question translation between languages. |
| Sample | Study participants include approximately 500 employees and 6,400 customers. | The delimitation of data was such that employee participants were those who had a customer survey attributed to the employee within two months of the employee characteristic measurements. |
| Participants | A generalization of the findings from the results may not be possible for all CCC industries due to the survey participants being customers and employees from a single organization within one industry. | The data is a large bank with CCCs in Canada servicing customers from Canada. Canada and the U.S. are quite similar for CCCs in the financial service industry, allowing for possible generalization to CCCs in both Canada and the U.S. |

**Significance of the Study**

**Contribution to Business Practice**

This research might be of value to business practitioners by identifying the significance of each employee characteristic considered in the regression model on customer satisfaction. CCC managers tend to monitor many metrics, including customer, employee, and organization metrics. This study provides managerially relevant guidelines for measuring employee metrics that will influence customer satisfaction. Since tangibles, such as the appearance of the office and staff, are not relevant to customers' satisfaction when conducting service with a CCC, the CSR is the main driver of customer satisfaction when customers contact the organization by telephone. By identifying the employee characteristics in the regression model significant to customer satisfaction, managers can focus on specific employee traits when training and coaching employees to increase customer satisfaction. Training and retaining employees who do not contribute to customer satisfaction are a waste of CCC resources.

**Implications for Social Change**

CSRs have stressful jobs, especially considering approximately 20% of customer transactions are hostile within the CCC (Madupalli & Poddar, 2014). With increased usage of self-service channels, customers are coming to the CCC with increasingly difficult problems and, in some cases, greater knowledge than the CSR has of the products and services (Kumar & Telang, 2012). Customers have high expectations from CSRs and can be very demanding. These expectations lead to customers who are regularly impolite, rude, and sometimes verbally abusive to CSRs during transactions

(Archer & Jagodziński, 2015). To add to the issues that CSRs face when taking calls, CSRs in the banking industry also have to deal with the loss of consumer trust because of the global financial crisis, which started in 2007. In 2013, the banking and financial services industries were the lowest trusted industries (Hurley, Gong, & Waqar, 2014). This lack of trust leads to calls that are more difficult for the CSR (Johnson & Peterson, 2014).

The results of this study can contribute to positive social change by helping identify the employee characteristics in the regression model significant to customer satisfaction. Through this identification, managers can hire CSRs predisposed to these characteristics. CSRs who can generate satisfied customers during transactions experience less job dissatisfaction and less stress. Amicable calls between CSRs and customers allow the CSR to preserve their dignity and feel worthwhile in their jobs. Less job dissatisfaction and less stress for the CSR also leads to increased CSR retention for CCCs in the banking industry.

## A Review of the Professional and Academic Literature

The purpose of this literature review was to gain a comprehension of the impact of employee characteristics (the individual independent variables of the linear regression model) on customer satisfaction (the dependent variable of the linear regression model) in the banking industry. A thorough review of the literature revealed the variables behind employees' effect on customer satisfaction and the unique characteristics of employees relevant to increased customer satisfaction. Reviewing the literature also allowed for a

confirmation of whether the independent and dependent variables are suitable for the research.

**Literature Review Strategy**

This structured literature review includes research from multiple databases using various terminology. Table 5 outlines the databases used in the search for literature and Table 6 outlines the search terms. My search for literature consisted of using the same search terms over all databases listed in Table 5, using individual databases and group searches through Thoreau and Google Scholar. The use of multiple search constraints focused the review of the literature. The first constraint was time, with one search restricting articles to those published since 2012 and another search without any time restrictions. A second search restriction was looking for articles only about the contact center industry, using the contact center search terms listed in Table 6 combined with the other search terms. A third search restraint was then focusing on literature in the service industry or restricted to the frontline by using the search terms *service* and the different forms of *frontline* listed in Table 6. While the intent of this literature review was to focus on the CCC banking industry, I reviewed literature from retail, hospitality, and sales industries as well due to the similarities.

Table 5

*Databases Used for Literature Review*

| Host system | Database name |
| --- | --- |
| EBSCO | Academic Search Complete |
| | Business Source Complete |
| | PsycINFO |
| Elsevier | ScienceDirect |
| Emerald | Emerald Management Journals |
| Gale | Expanded Academic ASAP |
| Google | Google Scholar (linked to Walden University Library) |
| Open Library | |
| ProQuest | Dissertations & Theses |
| | ABI/INFORM Complete |
| SAGE | Research Methods Online |
| | SAGE Premier |
| Taylor & Francis | Taylor & Francis Online |
| Thoreau | Database search of multiple databases |

Table 6

*Search Terms Used for Literature Review*

| Search term | Alternative search term |
| --- | --- |
| Balance theory | |
| Bank | Financial services |
| Contact center | Call center |
| | Call centre |
| | Contact centre |
| Customer satisfaction | Consumer satisfaction |
| Employee satisfaction | Employee motivation |
| | Employee loyalty |
| | Job satisfaction |
| Ordinary least squares | Multiple linear regression |
| Productivity | Job performance |
| Service | Frontline |
| | Front-line |
| | Front line |
| Service climate framework | |
| Service-profit chain | |
| Social exchange theory | |

After finding literature based on my search terms, I read the abstract of each article to determine whether the article pertained to my problem statement. I conducted thorough reviews of articles with abstracts indicating a link to the problem statement of this doctoral study to determine significance to my study. This review is limited to literature significant to the link between employee characteristics and customer satisfaction, regardless of whether the significance is positive or negative. Citations using articles more than five years old, but about my research, led to other appropriate literature for review.

After the selection of literature for review, I then confirmed peer-review of the reference through organization websites for individual journals or Ulrich's website, which is available from Walden University. If it was not apparent through the organization's website whether the journal was peer-reviewed, the status came from a search on Ulrich's website. Table 7 outlines the number of references in the literature review and through the entire doctoral study, including an indication of peer-reviewed status and age of reference.

Table 7

*Reviewed Literature and All References Statistics*

| Reviewed literature type | Literature <= five years old | Literature older than five years | Total number of literature | Percentage <= five years |
|---|---|---|---|---|
| Books | 0 | 1 | 1 | 0% |
| Peer-Reviewed Articles | 62 | 4 | 66 | 94% |
| Others (e.g., Gov.) | 0 | 1 | 1 | 0% |
| Total in Literature Review | 62 | 6 | 68 | 91% |
| Peer-Reviewed and <= 5 years | 62 | | 68 | 91% |

| | |
|---|---|
| Total number of all references | 129 |
| Total number of all references 5 or less years old: | 117 |
| Percentage of all references 5 or less years old: | 91% |
| Total number of all references that are peer reviewed: | 121 |
| Percentage of all peer reviewed references: | 94% |

The organization of the topics of the literature review is as follows: (a) theories linking employee characteristics with customer satisfaction, (b) individual employee characteristics affecting customer satisfaction, (c) customer satisfaction with reasons to focus on customer satisfaction, and (d) the methodology used in this doctoral study. For theories linking employee characteristics with customer satisfaction, the reviewed literature focused first on the service-profit chain model and then on competitive theories such as the balance theory, service climate framework, and social exchange theory. The individual employee characteristics reviewed were factors related to the problem statement, which included employee job satisfaction, empowerment, customer service training, supervisor skills, education, tenure, and productivity. The methodology planned for this doctoral study is ordinary least squares through multiple linear regression (MLR).

**Application to the Applied Business Problem**

The employee plays a large role in how customers perceive satisfaction in a service context. The purpose of this study is to examine the relationship between the characteristics of CSRs and the satisfaction of customers interacting with said CSRs. Specifically, the intent is to investigate whether specific personal characteristics of a CSR serving a banking customer can predict customer satisfaction when utilizing linear regression. Researchers attribute differing personal characteristics of employees to increased customer satisfaction (Heskett et al., 1994; Heskett, Sasser, & Schlesinger, 1997). The hypothesis is that the linear combination of tenure, training hours, empowerment, education, productivity, employee satisfaction with supervisor's skills, and employee job satisfaction will not significantly predict customer satisfaction. The

understanding of characteristics to focus on with employees can assist CCC managers in

the banking industry when driving improvements in customer satisfaction.

**Service-Profit Chain Model**

The service-profit chain model was the overarching theoretical framework for this

study. It is the most persuasive model explaining the linkage between employees and

customers (Khalaf, Rasli, & Ratyan, 2013). The model demonstrates a positive linear

relationship between employee characteristics, customer loyalty, and organization

profitability (Heskett et al., 1994). The employee characteristics are satisfaction, loyalty,

and productivity. Internal service quality metrics of workplace and job structure, hiring

and training practices, bonus and recognition practices, and the tools used in the

workplace supplemented the employee characteristic metrics in the service-profit chain

model (Heskett et al., 1994). Figure 2 shows the framework for the service-profit chain
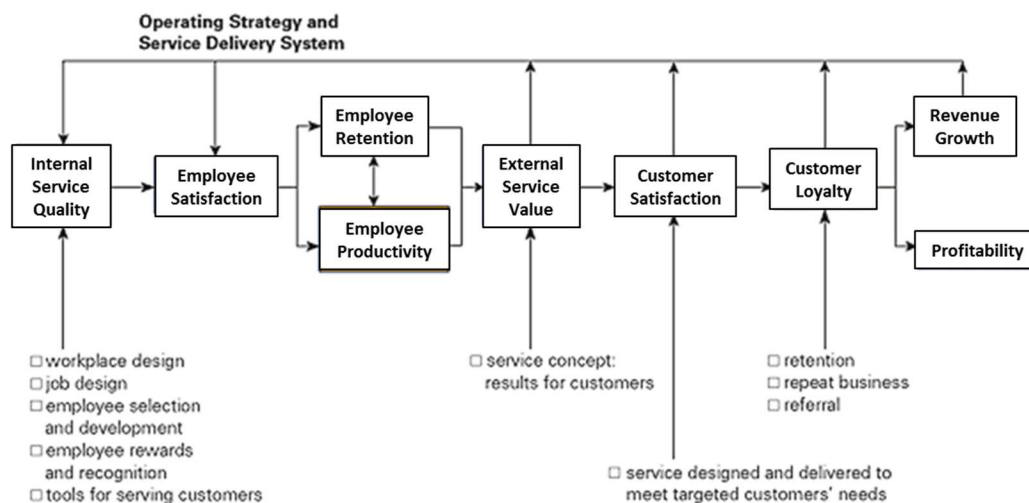
model.

*Figure 2*. The links in the service-profit chain model. From "Putting the service-profit chain to work," by J. L. Heskett, T. O. Jones, G. W. Loveman, W. E. Sasser, Jr, and L. A. Schlesinger, 1994, *Harvard Business Review*, *72*(2), p. 167. Copyright 1994 by *Harvard Business Review*. Reprinted with permission.

The premise behind the service-profit chain model is customer loyalty influences organizations' profit and growth (Heskett et al., 1994). Customer satisfaction is necessary to achieve customer loyalty, gained through the value customers perceive when being serviced by employees. Satisfied employees who are productive and loyal are more likely to achieve satisfaction from their serviced customers than those employees who feel dissatisfied with their position. To maintain satisfied employees, employers must support employees through appropriate internal service quality policies and processes that encourage high customer service. Heskett, Sasser, and Schlesinger (1997) further expanded the service-profit chain model, with examples in the industry and deeper explanations of the key relationships between the metrics.

Many researchers have attempted to demonstrate partial or full links between the factors in the service-profit chain model with varying results. One reason for the varying results may be time lags between factors (Evanschitzky, Wangenheim, & Wünderlich, 2012). An organization can invest in internal service quality; however, changes in employee satisfaction may take longer to internalize because of time lags. Another instance where a time lag may impact the links between factors is the relationship between increased customer satisfaction and increased profit or revenue. Customers may need to experience good customer service a few times before feeling elevated loyalty to the organization. Using longitudinal data over 3 years for a large European franchise retailer, Evanschitzky, Wangenheim, and Wünderlich (2012) introduced a conceptual model to include these time lags. However, Evanschitzky, Wangenheim, et al. found no time lag for the link between employee satisfaction and customer satisfaction. Heskett et al. (1997) described this relationship as the "satisfaction mirror" (p. 101) with employee satisfaction and customer satisfaction having one of the strongest relationships between the various factors in the service-profit chain model.

Some researchers suggested the links in the service-profit chain model may not be linear and are in fact asymmetric or nonlinear in some cases for certain industries (Anderson & Mittal, 2000). By incorrectly modeling the links as linear, efforts spent on improvement initiatives may not increase satisfaction due to the focus being on incorrect areas. Customer tenure may also account for differences in the relationships between the metrics because of timing. Increasing satisfaction for customers may differ depending on

the relationship stage the customer is in with the organization, and whether the customer is new or tenured (Anderson & Mittal, 2000).

Grigoroudis, Tsitsiridi, and Zopounidis (2013) used the service-profit chain model to assess links between customer satisfaction, employee satisfaction, and business performance for 16 branches of the same bank in Greece for the fiscal year of 2008. Through the assessment of the efficiency of the bank branches using a multistage Data Envelopment Analysis network model, Grigoroudis et al. observed that the ability to acquire overall efficiency required bank branches being efficient at every level of the service delivery process. The levels of the service delivery process were determining the meeting of customers' expectations, determining the performance of customer satisfaction, and then looking at the operational and customer satisfaction results. By not meeting one or more of the three levels of service delivery indicated the bank branch was not meeting customer expectations, achieving customer satisfaction, nor making operational profits.

Employee evaluation was through annual performance reviews consisting of 5-point Likert scales for factors such as the skills of the employee, team-orientation, work quality, quantity of work, and customer service orientation (Grigoroudis et al., 2013). Customer evaluation was through the bank's annual customer satisfaction surveys. The customer evaluation portion included factors such as the interaction with employees, service tangibles such as bank access, customer expectations, and customer loyalty. The measurement of operational profit was through bank deposits, loans, and new accounts.

For many of the bank branches, efficiency was lower for meeting customer expectations compared to the efficiency of realizing customer satisfaction or achieving operation profits and gaining loyal customers (Grigoroudis et al., 2013). Higher competition in the banking industry leads to higher expectations for customers. For five Ghana banks, observations showed excellent service delivery led to increases in either assets or profit or both, from 2008 to 2010 (Acheampong & Asamoah, 2013). Each of the five banks had five branches with the analysis following the service-profit chain model. However, Acheampong and Asamoah (2013) came to these conclusions without showing the quantitative methods. Also, customers indicated loyalty to their bank due to receiving high rates of interest and sound security, not just due to excellent service delivery.

Dyadic data is a popular method of showing the links in the service-profit chain model between individual employees and customers. However, difficulties lie with gathering dyadic data. Using dyadic data in a business-to-business environment in the financial services industry, researchers observed that the more satisfied sales employees were, the more satisfied their customers were (Evanschitzky, Sharma, & Prykop, 2012). These findings were from data gathered from 188 customers who interacted with 18 employees. Use of a hierarchical linear model reported the link between employee satisfaction and customer satisfaction. All measurements used a 5-point Likert scale of 1 (*very unsatisfied* or *fully disagree*) to 5 (*very satisfied* or *fully agree*). Measurement of customer satisfaction was through the two items of overall satisfaction with the organization and satisfaction with the business relationship with the organization.

Measurement of employee job satisfaction was through six items relating to the overall working conditions such as the atmosphere, policies, and procedures.

Also in the financial industry, a quantitative study reported links between employee satisfaction, customer satisfaction, and financial performance for a life insurance company in Pakistan (Hassan, Tabasum, & Luqman, 2013). The distribution of surveys to 300 customers and 300 employees resulted in 450 total respondents with 410 useable questionnaires. The measurement of employee satisfaction was through five dimensions of supervision, training and development, teamwork, organization policies, and wage resulting in 17 items overall. The measurement of customer satisfaction was through seven items using a 5-point Likert scale of 1 (*strongly disagree*) to 5 (*strongly agree*). The measurement of financial performance was through four items on the employee survey plus the financial metrics of return on sales, return on investment, return on assets, and overall profitability.

While the service-profit chain model shows a direct relationship between internal service quality and employee behavior, *service climate* could be a missing factor between these two items (Hong et al., 2013; Morsy, 2015). Service climate is employees' perceptions of what the organization is doing to achieve quality in service levels. Human resource (HR) practices, such as customer service training, empowerment, and awarding service-oriented behavior, can achieve service climate. Through a meta-analysis, Hong, Liao, Hu, & Jiang (2013) reported a link between service climate items of HR practices and leadership orientation for internal service quality and employee behavior.

Morsy (2015) also reported a significant and positive relationship between employees' perceived service climate with both employee satisfaction and customer satisfaction. However, employee satisfaction had a higher impact on customer satisfaction than service climate did. This study was for a telecommunications organization in Egypt using both employee satisfaction and customer satisfaction surveys. Of the 800 employees and customers selected for participation over 25 days in September of 2014, surveys from 341 employees and 350 customers were useable for analysis. The questionnaire for employees measured employee satisfaction and perceived service climate. The customer questionnaire measured service quality and customer satisfaction. Both surveys used a 5-point Likert scale of 1 (*strongly disagree*) to 5 (*strongly agree*). The measurement of service climate was through four items specific to (a) employee knowledge, (b) reward and recognition for employees, (c) tools available to achieve customer service, and (d) overall level of service quality for the organization. The measurement of employee satisfaction was through four items about satisfaction with the job and staying with the company. The measurement of customer satisfaction was through three items about (a) satisfaction, (b) delight, and (c) expectations exceeded with the service received.

Another suggested missing component to the service-profit chain model is *internal marketing* (Shah, 2014). Internal marketing occurs when organizations market to their internal customers, who are the employees, by communicating the values of the organization. Internal marketing of a customer-oriented organization ties into customer satisfaction by leading to gains in employee productivity and quality, resulting in

satisfied customers and increased profits and revenue. However, use of internal marketing for a private men's swimming pool did not lead to a significant impact on customer satisfaction (Amirtash, Ali, Afsharian, & Shahraki, 2015).

**Rival Theories/Opponents of the Service-Profit Chain Model**

Use of the service-profit chain model is suitable for conducting analysis at the individual level. Thus, the archival data used in this study leads to the service-profit chain model being an acceptable model to use for analysis, especially considering the variables available to study. However, many theories in existence link customer satisfaction with employee attributes and satisfaction. Some of the predominant theories are balance theory, social exchange theory, and service climate theory.

**Balance theory.** Balance theory posits that the relationship between customer, employee, and organization is either balanced or not balanced (Bhaskar & Khera, 2013). The premise is a balanced state will occur between the three entities. For example, if employees are dissatisfied with the organization, eventually customers will become dissatisfied as they are dealing with unhappy employees. While the reverse should be true, instances may exist where employee morale is high due to internal processes but employees are indifferent about customer satisfaction. Similar to the service-profit chain model, studies suggest employee job satisfaction affects customer satisfaction more so than the reverse (Bhaskar & Khera, 2013). I decided against balance theory as a framework for this study since the focus of the study is an analysis of the effect of employee satisfaction on customer satisfaction. If the focus of the study was to determine

the existence of a reciprocating effect between employee job satisfaction and customer satisfaction, then the balance theory would be suitable.

**Social exchange theory.** Social exchange theory posits that social exchange leads to feelings of accountability and appreciativeness between people (Bhaskar & Khera, 2013). The premise behind the social exchange between employees and the organization is that organizations showing commitment to employees reap the benefits of increased employee job satisfaction, commitment to the organization, and job performance (Gibbs & Ashill, 2013). This reciprocating commitment is the social exchange between the organization and employee. Satisfied employees are more likely to have a higher service orientation than those employees who are not satisfied. Happy employees generate satisfied customers with those customers being loyal to the organization (Bhaskar & Khera, 2013). The ideas behind the service-profit chain model stem from social exchange theory in that employees rewarded appropriately by the organization for service output will have higher employee job satisfaction, leading to higher performance (Gounaris & Boukis, 2013). The service-profit chain model was the framework selected for this study instead of social exchange theory, as the service-profit chain model is an extension of social exchange theory.

**Service climate framework.** Service climate is how employees view service quality for an organization based on the policies and procedures of the organization, as well as the expectations of employees regarding the business practices of recruiting, training, and rewarding (Bowen & Schneider, 2014). The service climate framework posits that the processes and procedures organizations use leads to employee assessment

of support from the organization (Bhaskar & Khera, 2013). If organizations are supporting employees in their efforts to achieve customer satisfaction, then employees are more likely to have a high service quality with customers.

While the service climate framework is similar to the service-profit chain model, it is more specific to how the employees' perception of the organization's policies and procedures leads to customer satisfaction. The measurement of service climate is through the collective of employees, compared to job satisfaction, which is individual (Bowen & Schneider, 2014). This study does not use the service climate framework due to the variables offered in the archival data.

**Internal Service Quality**

According to the service-profit chain model, the internal service quality experienced by employees contributes the most to job satisfaction (Heskett et al., 1994). This contribution is especially true in the CCC environment due to the nature of CCC work. While CCC work is quite similar to face-to-face frontline positions, CSRs experience different issues as the only interaction with customers is verbally over the phone. Typically, CCC work environments are more stressful than face-to-face settings. CSRs regularly face rudeness from customers through impoliteness, with some customers going so far as verbally abusing CSRs when expressing frustration (Archer & Jagodziński, 2015). CCC leaders assent to customer impoliteness by coaching CSRs to use certain nonconfrontational words with customers and advocating preformatted responses for CSRs to use with customers. The preformatted responses lead to reduced rapport between customers and CSRs, contributing to customer rage (Harris, 2013).

Customer confrontations can also lead to increased CSR job dissatisfaction resulting in the CSRs' intention to leave the organization.

Van Dun, Bloemer, and Henseler (2012) developed a scale to measure job quality specifically for CSRs using six organizations over four service industries. Measurement of the items was on a 7-point Likert-type scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The use of focus groups involving CSRs from a bank, a government organization, a telecom, and two health insurance providers determined the dimensions of the scale. The use of exploratory factor analysis reduced the items in the scale via surveys with 134 employees, leading to 77 participants who answered every question in the survey.

Use of confirmatory factor analysis further reduced the scale to 13 factors through a study of six business-to-consumer companies from the Netherlands: two banks, a government organization, a telecom, and two health insurance providers. Items similar to face-to-face encounters were career advancement opportunities, lack of role ambiguity, empowerment, rapport with a supervisor, enjoying the work accomplished, and enjoying the atmosphere while working. Compared to face-to-face service measures, the scale had additional measures of the learning aspect from both customers and employees, allowing employee input to increase the value employees feel, sharing information with employees, being honest with employees, and easiness of tools used by employees.

Van Dun et al. (2012) focused on factors having an effect on CSR turnover on the premise that high CSR turnover leads to a reduction in productivity and service quality, driving down customer satisfaction as per the service-profit chain model. However, the

focus was only on the development of the scale and not on the examination of the factors about employee job satisfaction. Van der Aa, Bloemer, and Henseler (2012) extended the research by exploring how these combined factors of CCC job quality affected CSR job satisfaction, affective commitment, and CSR turnover rates. With data from six business-to-consumer organizations in the Netherlands (two banks, a government organization, a telecom, and two health insurance providers), van der Aa et al. modeled the CCC job quality factors against factors for CSR job satisfaction, affective commitment, and CSR turnover using structural modeling. The results showed a significant, positive impact on CCC job quality, with CSR job satisfaction having a significant positive impact on affective commitment. Both job satisfaction and affective commitment had an adverse impact on CSR turnover, leading CCC job quality to have an indirect effect on CSR turnover. CCC managers placing a focus on internal service quality metrics can increase CSR job satisfaction and reduce turnover rates, leading to increased customer satisfaction.

The focus of the literature review for the following subsections is on factors available in the archival dataset used in this study. The internal service quality factors reviewed are empowerment, supervisor skills, customer service training, employee education, and employee tenure. These various factors have shown to influence employees in regards to job performance, job satisfaction, customer orientation, and turnover intentions in the banking service industry (Glaveli & Karassavidou, 2011; van der Aa et al., 2012; Yavas & Babakus, 2010). When studying frontline employees for a New Zealand bank, researchers observed a close association between job satisfaction and

turnover intentions for supervisor support and employee education while empowerment affected job performance (Yavas & Babakus, 2010). Across 50 branches of the bank, the data set included survey responses from 530 frontline employees. The analysis was with canonical correlation analysis. Common method bias may be an issue in the study as all metrics were through the frontline employee survey responses, including the assessment of job performance. To reduce common method analysis, one can alternatively assess job performance using manager or operational metrics.

**Empowerment.** The level of authority an employee feels they have to make decisions without consulting a manager is defined here as empowerment. The premise is employees who feel they have the empowerment to make decisions on customer inquiries and concerns can contribute to increasing employee job satisfaction and customer satisfaction. According to Bailly and Léné (2015), service workers having direct contact with customers are increasingly required to have the authority level to resolve customer inquiries or problems compared to historical requirements of deference and conformity at work. The structure of customer service training should place emphasis on increasing employees' level of authority.

For the hospitality industry, empowerment had an indirect effect on customer satisfaction through leader empowering behaviors, mediated through employee job satisfaction (Namasivayam, Guchait, & Lei, 2014). An example of leadership empowering behaviors included training frontline employees to improve skills. The assessment of employee empowerment was through a 12-item scale measure using a 7-point Likert scale from *strongly disagree* to *strongly agree*. Measurement of customer

satisfaction was through a 6-item scale. This study was over 40 different restaurants

belonging to a midsized family restaurant chain based in the Northeastern United States.

On the frontline employee side, 365 employee surveys distributed resulted in 238 useable

surveys. On the customer side, use of both printed and online surveys resulted in 2,915

surveys.

When conducting a meta-analysis on empowerment, Maynard, Gilson, and

Mathieu (2012) reported employee job satisfaction as the most researched variable

regarding its link to individual employee empowerment. However, Maynard et al. did not

reference a link between empowerment and customer satisfaction, although much

literature indicates a link between employee job satisfaction and customer satisfaction.

Namasivayam, Guchait, and Lei (2014) stated that their study was the first study of its

kind to observe the link between employee empowerment and customer satisfaction.

Zahoor, Rafiq, Zia, and Rizwan (2014) found no significant relationship in their

quantitative study when examining employee empowerment and job satisfaction using

regression analysis. Measurement of employee satisfaction was through five items

regarding whether work was satisfying, worthwhile, challenging, interesting, and gave a

sense of accomplishment. The measurement of employee empowerment was through

three items with being able to handle problems on their own, having control over the

handling of the problems, and having the authority to correct customer problems. Zahoor

et al. did not address the scale used for measurement of the items. The respondent targets

were participants from the public and private sector in Bahawalpur, India, with a focus on

university and bank employees. A target of 180 respondents resulted in 150 useable

surveys. Zahoor et al. contributed the lack of relationship between employee empowerment and job satisfaction to some employees not wanting the power to make decisions. Limitations of the study are the specific geographical area, which may have influenced the results.

Required call scripting in the CCC industry can lead to a feeling of less empowerment when CSRs interact with customers, which in turn increases work stress. However, Berkbigler and Dickson (2014) observed that giving CSRs the authority to have flexibility in the required scripting reduced work stress. CSRs, from two CCCs within two different organizations in the United States, voluntarily completed paper surveys (Berkbigler & Dickson, 2014). Out of the 322 employee surveys distributed, 122 were useable for analysis. Measurement of work stress was through the Job-Related Tension Index, a 15-item scale using a Likert-scale of *never* to *nearly all the time*. Measurement of flexibility in scripting was through five questions using a 5-point Likert scale involving questions relating to having authority to change scripting and the effectiveness of changing the scripting. Pretesting of the survey for a pilot group of 10 participants highlighted a necessary redesign, which resulted in a final survey after 11 participants tested the redesign. However, the questions the researchers used to measure scripting were new in this study (Berkbigler & Dickson, 2014).

While Berkbigler and Dickson (2014) observed some authority level reduces job stress, other researchers reported too much empowerment increases job stress, especially if there are higher levels of role ambiguity (Ackfeldt & Malhotra, 2013). Frontline employees in the travel service industry for a single company in the United Kingdom

participated in the paper survey with 520 surveys sent out, and 184 useable surveys returned. The measurement of empowerment was through a 6-item scale.

When assessing angry customers in the CCC industry, Gong, Yi, and Choi (2014) observed the link in their quantitative study between empowerment and CSR job satisfaction, mediated by perceived justice and intervention satisfaction, in the telecommunications industry in South Korea. The relationships were such that a relationship existed between empowerment and intervention satisfaction, mediated by perceived justice. Empowerment then linked to CSR job satisfaction, as there was a positive relationship between intervention satisfaction and job satisfaction. The measurement of empowerment was through a 4-item scale. Measurement of CSR job satisfaction was through a 4-item scale. All questions were a 7-point Likert-type scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Respondents were CSRs asked to recall an incident within the last 6 months where a customer was angry enough that the CSR reported the incident to their supervisor (Gong, Yi, & Choi, 2014). These restrictions resulted in 133 respondents to the questionnaire.

**Supervisor skills.** Employees cannot gain or maintain the necessary skills in customer service without having a supportive supervisor. While the service-profit chain model does not show supervisor support as one of the internal service quality metrics leading to employee satisfaction, a review of the literature showed a link between supervisor support and job satisfaction through employee engagement. Employees who received support from immediate supervisors reciprocated through increased work engagement and productivity (Agarwal, Datta, Blake-Beard, & Bhargava, 2012).

Granatino, Verkamp, and Parker (2013) observed an increase in customer satisfaction and employee engagement when training occurred for frontline managers and supervisors in communication and coaching skills. The management training focus was on a culture of service excellence in the healthcare industry. After completion of management training, the employees' satisfaction with their management team increased by 11%. Customer satisfaction also increased after service excellence training, resulting in a 19% increase in customer satisfaction with customer service levels.

In the educational service industry, when looking into the link between employee satisfaction and customer satisfaction, Jeon and Choi (2012) reported supervisor support did not moderate the relationship between employee satisfaction and customer satisfaction. This lack of moderating effect may be from the setting of educational service where relationships are long-standing between tutor and student, and tutors tend to need little guidance from supervisors. However, for close working relationships between front line food service representatives and supervisors, Jung and Yoon (2013) observed a link between employee satisfaction with their supervisor and customer satisfaction in family restaurants.

When splitting supervisor support into support and feedback, no significant relationship existed between supervisor support and work engagement, but supervisor feedback did have a positive, significant relationship with work engagement (Menguc, Auh, Fisher, & Haddad, 2013). These observations were for a Canadian company in the specialized retail industry. The measurement of supervisor support was through three items relating to the concern for employee welfare, willingness to listen, and reliability.

The measurement of supervisor feedback was through three items relating to information given to employees regarding work goals, performance feedback, and coaching to improve performance. Averaging the three dimensions of vigor, dedication, and absorption gave the measurement of work engagement through a higher-order construct.

While supervisor support did not have a significant direct relationship with work engagement, when considering perceived autonomy, a positive, significant relationship showed between supervisor support and work engagement for high levels of perceived autonomy (Menguc et al., 2013). The measurement of perceived autonomy was through using personal judgment, making decisions, and having the freedom to decide what to do while working. Focusing on work engagement is important as positive work engagement led to customers perceiving high employee performance.

A quantitative study observed this link between supervisor support and work engagement mediated by empowerment for three organizations in the Indian service sector, as well as a direct relationship between supervisor support and work engagement using regression analysis (Jose & Mampilly, 2015). The measurement of perceived supervisor support was through four items. The measurement of work engagement was through the three dimensions of vigor, dedication, and absorption from the Utrecht Work Engagement Scale. The measurement of empowerment was through 12 items relating to four aspects of empowerment. All items used a 5-point Likert-type scale of 1 (*strongly disagree*) to 5 (*strongly agree*).

Supervisor support also correlated positively with work engagement in the Indian services sector through structural equation modeling (Agarwal et al., 2012). The

measurement of supervisor support was through questions about the leader-member exchange using a 7-item scale with a 7-point Likert scale. The measurement of work engagement was through a 9-item scale of vigor, dedication, and absorption from the Utrecht Work Engagement Scale. Surveying managers from six private service organizations resulted in 979 questionnaires for analysis.

Perceived supervisor support can also reduce employee turnover intentions. The results from a quantitative study of five multinational companies in the service sector of China showed a direct relationship between perceived supervisor support and employee turnover intentions (Newman, Thanacoody, & Hui, 2012). Distribution of internet or paper surveys to randomly selected employees from the five companies resulted in 437 participants. Employees selected for surveying were in managerial or administrative positions. The measurement of perceived supervisor support was through five items, and the measurement of turnover intentions was through four items. The direct relationship between perceived supervisor support and employee turnover intentions may be from the strong relationships between supervisors and employees fostered by the Chinese culture.

In the CCC industry, Gong et al. (2014) observed the link between supervisor support and employee satisfaction, mediated by perceived justice and intervention satisfaction. Measurement of supervisor support was through a 4-item scale focusing on social support when dealing with angry customers. Items focused on the supervisor supporting the CSR through sympathy, affection, putting the CSR at ease, and offering advice. Measurement of employee satisfaction was through a 4-item scale. Measurement of perceived justice was through a 3-item scale focusing on how the supervisor handled

the angry customer, and whether the CSR experienced fair treatment and adequate compensation because of the angry customer. Measurement intervention satisfaction was through a 3-item scale focusing on satisfaction with the resolution between the angry customer, the supervisor, and the CSR.

Employees frequently experience interactions with angry or rude customers in the CCC industry, making support from supervisors regarding interventions with angry customers necessary when trying to increase employee satisfaction (Gong et al., 2014). Supervisors must have the skills to support employees through training on how to deal with angry customers. Supervisors should empower employees such that employees feel they have the authority level to deal with customer issues on their own.

Supervisor support, in the form of coaching, has an effect on customer orientation. In the Canadian banking industry, Pousa and Matheiu's (2014) quantitative study reported a relationship between supervisory coaching and employees' customer orientation through structural equation modeling. Measurement of supervisory coaching was through eight items about the supervisor providing feedback and resources, setting expectations, and coaching through questions and role-play. Measurement of customer orientation was through five items about determining customer needs and offering products/services that will satisfy the customer. Questions used Likert-type scales of 1 (*strongly disagree*) to 7 (*strongly agree*). Email invitations sent to frontline financial advisers who had sales responsibilities resulted in 122 useable surveys completed.

**Customer service training.** Heskett et al. (1994) proposed employee selection and development as one of the internal service quality metrics leading to employee

satisfaction, and thus to customer satisfaction. The skills employees learn in training can increase employee job satisfaction and service quality with the application of those skills on the job, defined as a transfer of training (Zumrah, Boyle, & Fein, 2013). Therefore, a focus on customer service training drives increased organization profit according to the service-profit chain model.

Zumrah, Boyle, and Fein (2013) reported in their quantitative study a positive and significant relationship between the use of skills learned in training and both employee job satisfaction and service quality. The collection of data occurred over 2 months in 2011, giving results between 4 and 24 months after training of employees. The study was with 222 employees from the public sector in Malaysia who participated in a financial training course between 2009 and 2010. The internal customers who completed the survey were 624 colleagues. The measurement of transfer of training was through six items in a survey to supervisors. Measurement of employee job satisfaction was through three items from the Michigan Organizational Assessment Questionnaire. The measurement of service quality was through the SERVQUAL survey with the customers of the employees, who were the peers of the employees as internal customers were the focus of this study. With the tangible portion of the SERVQUAL questionnaire removed, 18 items relating to reliability, responsiveness, assurance, and empathy measured service quality. While the results of this study supported the effect of the transfer of training on employee job satisfaction, whether the transfer of training had an impact on service quality for customers, and not just internal customers, was inconclusive.

Zumrah (2015) further analyzed the data set to determine whether training had an effect on employee job satisfaction and service quality. Here, the measurement of training was different from Zumrah et al.'s 2013 study as it was through four items relating to items such as increased knowledge due to training. However, the measurement of job satisfaction and service quality was the same as Zumrah et al.'s 2013 study. This new definition of training resulted in a positive and significant relationship with employee job satisfaction. However, training had a negative correlation to service quality, which was not significant. Zumrah also observed no significant relationship between job satisfaction and service quality. An explanation for the nonsignificance is missing variables that may have an impact on Malaysian public sector employees regarding service quality (Zumrah, 2015).

In the healthcare and telecommunication industries, the literature showed an impact of employee training on customer satisfaction (Abbasi & Alvi, 2013; Granatino, Verkamp, & Parker, 2013). Using mystery shopping and employee surveys, Granatino et al. (2013) observed an increase in employee engagement and customer satisfaction through training of frontline managers and supervisors on communication and coaching skills focused on increasing customer service in the healthcare industry. Employees satisfied with their positions were likely to interact with callers and focus on the levels of customer service they were providing.

Granatino et al.'s (2013) study consisted of surveying 49 out of 51 employees with a healthcare organization in the Midwest. The customer portion was through sixteen phone calls made by mystery shoppers. Granatino et al. constructed a training curriculum

using the employee survey results, customer mystery shopping results, and subsequent roundtable discussions with employees. Use of the training curriculum resulted in an 11% increase in employee satisfaction with the management team and a 19% increase in customer satisfaction with customer service levels.

In the telecommunications industry, Abbasi and Alvi (2013) reported expertise as one of the employee characteristics having a significant impact on customer satisfaction. In a sales environment for the mobile phone service sector, customers were more likely to relate to employees who had the expertise to sell a product tailored to the customer. The appropriate training allowed employees to acquire this expertise.

Abbasi and Alvi's (2013) quantitative study consisted of surveying 151 customers and 101 employees of a telecommunications service provider in Pakistan. Abbasi and Alvi reported strong, positive correlations between customer satisfaction and the employee characteristics of expertise and reliability. However, they observed an insignificant relationship between customer satisfaction and empathy. Measurement of expertise was through three items, reliability through four items, empathy through five items, and customer satisfaction through nine items.

Lee's (2012) quantitative study of HR representatives and managers for 440 companies in South Africa employed regression analysis to compare customer service and training. Lee reported customer service as moderately correlated to training. However, this effect differed dependent on company size. Training had a negative impact on customer service for companies under 50 employees and did not have an impact on customer service until companies had 500 employees or more. The measurement of

customer service orientation was through a 9-item scale using items related to customer focus for the organization. The measurement of high-performance HR practices included the measurement of training. Results may be of concern due to common method bias since the HR representatives supplied details for both customer service and HR practices.

In a quantitative study with the service-profit chain as the theoretical framework, Glaveli and Karassavidou (2011) specifically examined training and its effect on employee satisfaction, and then through to customer satisfaction and organization profitability for a large bank in Greece. Glaveli and Karassavidou observed through simple regression models that quality of training, through support activities before and after training, had a greater impact on how employees perceived the advantages of training rather than quantity of training. The quantity of training was the number of training hours on an annual basis for the previous 2 years. The impact the quality of training had implies supervisor support after training being important for employees learning new skills. When employees discern the benefit of training, they were more likely to have greater job satisfaction, leading to loyalty to the organization. Glaveli and Karassavidou furthered their research into the impact of training by determining the effect of employee loyalty on customer satisfaction, and thus on organization performance, through customer satisfaction surveys and the relative profitability efficiency of each bank branch. Use of data from multiple sources reduced common method bias in this study.

The measurement of employee perceived training benefits in Glaveli and Karassavidou's (2011) study was through a 15-item scale with two dimensions, the first

focusing on job-related benefits such as improved job skills and the second focusing on

employee benefits such as increased wage and career opportunities. The measurement of

employee job satisfaction was through a 9-item scale based on the Minnesota Satisfaction

Questionnaire. The measurement of customer satisfaction was at the branch level and

through a 6-item scale focusing on (a) employees' skills and behavior, (b) offered

services and products, (c) office appearance, (d) functionality of access to the bank, and

(e) the soundness of the bank. The sample contained 154 employees and 457 customers

for the employee and customer surveys.

**Employee education.** In the CCC industry, work is fairly standardized and

structured. Thus, higher educated CSRs might feel less satisfied with their job as highly

educated CSRs would have an education-job mismatch, resulting in an education

underutilization for the employee. Badillo-Amador and Vila's (2013) quantitative study

reported overeducated employees as dissatisfied with their overall jobs; however, this

observation did not hold for undereducated employees. Data was from the Spanish

portion of the European Community Household Panel in 2001.

Similarly, in the hospitality industry, Arash, Daşkin, and Saydam's (2014)

quantitative study reported education having an impact on employee job satisfaction such

that higher educated employees were less satisfied with their jobs than employees were

with less education. Arash et al. used the employee demographics of (a) age, (b) gender,

(c) education, and (d) tenure as control variables in the model of the relationship between

employee motivation and job satisfaction for frontline employees of hotels in North

Cyprus. Only job tenure and employee education had a statistically significant effect on

job satisfaction. Of the 500 questionnaires distributed to employees, 317 were usable for the analysis.

When observing the results of employee surveys for a Canadian CCC in New Brunswick, CSRs who had no education, or only a certificate or diploma not coming from a university, reported higher employee job satisfaction (Echchakoui & Naji, 2013). When CSRs had a university certificate or diploma, employee job satisfaction was lower. The significant relationship between CSR education and job satisfaction was specific to CSRs' satisfaction with their autonomy to complete their work. However, employee job satisfaction relating to working conditions, policies and procedures, and supervisory or management relationships were not significant in employee education.

Echchakoui and Naji (2013) measured employee job satisfaction through the Minnesota Satisfaction Questionnaire of 20 questions using a Likert scale from 1 (*very dissatisfied*) to 5 (*very satisfied*). The classification of employee education was (a) no education, (b) a certificate, diploma or degree, (c) high school or equivalent, (d) a certificate or diploma not from a university, (e) a certificate or diploma from a university but below a bachelor level, (f) a certificate or diploma at the bachelor level or higher, and (g) a bachelor degree. For the 200 CSRs in the CCC, 108 completed the survey and submitted the survey to a box in the reception area to guarantee anonymity.

Similar to those CSR findings, higher education also indicated turnover for salespeople (Boles, Dudley, Onyemah, Rouziès, & Weeks, 2012). Salesperson turnover rates are similar to CSRs with rates as high as 50% in the first year. The CCC industry has remarkably high employee turnover, which has an immense business impact on the

cost of running a CCC (van der Aa et al., 2012; van Dun et al., 2012). For inbound CCCs, CSR turnover can account for 60% to 80% of the operating budget (Ma, Kim, & Rothrock, 2011).

In the telecommunications CCC industry, education mediated the relationship between work-related attitudes and quality of service for customers such that as education levels increased, quality of service for customers increased when using one-way ANOVA (Mansour & Nusairat, 2012). Work-related attitudes were job satisfaction, three forms of commitment, and job involvement. However, the assessment of service quality was through employee surveys. Common method bias may have influenced the results because the employee surveys generated all the measurements.

**Employee tenure.** Reduced turnover rates lead to a higher quantity of tenured employees within the organization. Employee turnover in the service industry causes a drop in productivity due to learning curves of new employees, resulting in decreased customer satisfaction. According to the service-profit chain model, employee satisfaction can gauge employee turnover (Heskett et al., 1994). When an employee is not satisfied, they are more likely to leave an organization than those who are satisfied (Poddar & Madupalli, 2012; van der Aa et al., 2012).

Van der Aa et al. (2012) observed the link between job satisfaction and employee turnover in six Netherlands CCCs with job satisfaction having a negative impact on employee turnover. The items were all measured using a 7-point Likert-type scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). Poddar and Madupalli (2012) reported the link between job satisfaction and employee turnover for 215 CSRs

from various CCCs in India who serve American customers. The measurement of job

satisfaction was through a 4-item scale regarding the job (a) being exciting, (b) being

satisfying, (c) being worthy, and (d) giving a sense of accomplishment (Poddar &

Madupalli, 2012). The measurement of turnover intentions was through a 5-item scale

about metrics of intentions to leave, look for other work, and stay at the company for an

entire career (Poddar & Madupalli, 2012). The questions were using a 7-point Likert-type

scale of 1 (*strongly disagree*) to 7 (*strongly agree*).

In the hospitality industry, employee tenure had an impact on employee job

satisfaction such that longer tenured employees were more satisfied with their jobs than

less tenured employees were (Arash, Daşkin, & Saydam, 2014). Similarities exist

between the hospitality industry and the CCC industry as turnover rates are high, and it is

difficult to hire qualified service-oriented employees. In this study, the measurement of

tenure was on a 5-point scale. The measurement of employee job satisfaction was through

a 5-item scale using a 5-point Likert-type scale of 1 (*strongly disagree*) to 5 (*strongly

agree*).

Tenured employees support an organization more thoroughly than new hires and

less tenured staff. For instance, when investigating CSR burnout, Rod and Ashill (2013)

observed higher tenured inbound and outbound CSRs in the banking industry

experienced less burnout compared to lower tenured CSRs. It is important to reduce CSR

burnout as employees are likely to disengage from the customer when burnout occurs,

reducing customer satisfaction. CSRs experiencing burnout are also likely to have

intentions to leave the organization (Choi et al., 2012).

While tenure may influence customer satisfaction for CSRs, tenure had no influence on customer satisfaction for business-to-business sales employees at a financial service organization in Europe (Evanschitzky, Sharma, et al., 2012). Use of dyadic data for customers and employees through multilevel regression modeling reported no difference in customer satisfaction based on tenure. However, sample sizes for employee and customer surveys were low with only 18 employees surveyed and 188 customers participating out of 1,119 invitations.

**Employee Job Satisfaction**

The service-profit chain model proposes that satisfied employees are more likely to achieve customer satisfaction than those employees who are dissatisfied, because satisfied employees are productive and loyal (Heskett et al., 1994). Employee job satisfaction is the most important area for an organization to focus on considering its effect on employee productivity and loyalty (Khalaf et al., 2013). This impact is what leads to satisfied customers when dealing with happy and productive employees (Pantouvakis & Bouranta, 2013).

Service organizations focus on increasing their employees' job satisfaction because of the proposed influence on customer satisfaction. The results from many studies show a link between employee job satisfaction and customer satisfaction, especially for those employees who performed personal services for customers (Mendoza & Maldonado, 2014). Mendoza and Maldonado's (2014) meta-analytic study focused on the correlations between the organization level of employee job satisfaction and customer satisfaction, with 1,483 companies in the analysis. Employee job satisfaction is a key

metric to achieving customer satisfaction as satisfied employees are committed and engaged with the organization, leading to achievement of the organization's objectives for customer satisfaction (Pantouvakis & Bouranta, 2013).

Not only does employee job satisfaction have an impact on customer satisfaction, but it can also lead to customer repurchase intentions later on due to the relationship built by satisfied employees with customers (Gounaris & Boukis, 2013). Employees satisfied with their job are more likely to have a bond with customers, leading to the development of a relationship between the customer and the organization. Customers with a relational bond with the organization are less likely to switch to another organization, leading to repurchase intentions in the future.

Jeon and Choi (2012) witnessed an influence of employee job satisfaction on customer satisfaction using dyadic data. The influence appeared in situations where the customer had frequent interactions with the employee, as seen with private tutors and students. However, Jeon and Choi did not observe a reverse influence of customer satisfaction on employee job satisfaction.

In the food services industry, Jung and Yoon (2013) reported an indirect link between employee job satisfaction and customer loyalty, with customer satisfaction being a mediator, in their quantitative study. Thus, satisfied employees lead to satisfied customers, which can lead to loyal customers in the future. Employee satisfaction with their supervisor and pay also had a positive influence on customer satisfaction. This positive influence may be due to the data being from the family restaurant business, with lower pay being standard in the industry compared to other frontline service industries.

For an Iranian insurance company, Kermani (2013) investigated the link between employee job satisfaction and customer satisfaction with service quality. Using 30 employees and 30 customers of the insurance company, Kermani observed a significant positive relationship between employee job satisfaction and customer satisfaction. However, Kermani did not indicate how the measurement of the variables occurred. Moreover, reporting of significance for the relationship between job satisfaction and service quality is incorrect compared to the reporting of significance for service quality to customer satisfaction and job satisfaction to customer satisfaction. As well, Kermani did not comment on whether the data was dyadic with the customers surveyed being the ones serviced by the surveyed employees.

Morsy (2015) reported a significant and positive relationship between employee satisfaction and customer satisfaction in the telecommunications industry. This study was for a telecommunications organization in Egypt using both employee satisfaction and customer satisfaction surveys. While service quality had the largest impact on customer satisfaction, employee satisfaction had the second largest impact on service climate being last in its impact on customer satisfaction.

Also in the telecommunications industry, Mansour and Nusairat's (2012) quantitative study showed employee job satisfaction having a positive and statistically significant impact on service quality for CSRs. Mansour and Nusairat used multiple regression to examine the effect job satisfaction, affective commitment, continuance commitment, normative commitment, and job involvement had on the quality of service. Both job satisfaction and affective commitment had a statistically significant effect on

service quality, with job satisfaction having the second highest coefficient of

determination of all the variables. All measurements of variables were through employee

surveys with 248 useable responses out of the 515 surveys distributed. The measurement

of service quality was through 11 items adapted from the SERVQUAL instrument. The

measurement of job satisfaction was through five items adapted from the Servant

Organizational Leadership Assessment instrument.

**Employee Productivity**

The service-profit chain model links employee loyalty as a driver of productivity

(Heskett et al., 1994). Satisfied and loyal employees are more likely productive as well

compared to dissatisfied employees. Gibbs and Ashill (2013) observed this link between

employee job satisfaction and productivity for the banking industry in Russia. Managers

invited frontline employees from six branches of a major commercial bank, the largest

private bank in the Saratov Region, to complete employee surveys. Gibbs and Ashill

guaranteed employee anonymity by collecting surveys via a box in each of the branches.

With 80% of frontline employees completing the voluntary survey, 186 results were

available for analysis. Measurement of employee job satisfaction was through a 5-item

scale as was job performance, or productivity. Scales for the questions were 5-point

Likert scales from *strongly agree* to *strongly disagree*. Measurement of productivity was

from the frontline employees' viewpoint of whether they consistently performed higher

than their peers' performance and performed well with customers when delivering

service.

While observation of this link occurred for the banking industry in Russia, the link between job satisfaction and task or contextual performance did not materialize for employees in the banking industry in Pakistan (Shaikh, Bhutto, & Maitlo, 2012). Distribution of 200 employee surveys resulted in 120 useable surveys. Measurement of employee job satisfaction and job performance was through the Job Satisfaction and Job Performance instrument.

By combining the Finnish part of the European Community Household Panel and the longitudinal employer-employee data from Statistics Finland, Böckerman and Ilmakunnas (2012) examined the effect of employee job satisfaction on productivity at an organizational level, instead of at an individual employee level. While Böckerman and Ilmakunnas observed that job satisfaction did not affect individual sales per employee in the nonmanufacturing industry, job satisfaction did have a positive effect on productivity with high-productivity manufacturing plants.

Abbasi and Alvi (2013) also observed the effect of employee performance on customer satisfaction, where the definition of employee performance was with the traits of efficiency, responsibility, and integrity. Abbasi and Alvi reported employee performance having a positive impact on customer satisfaction. Measurement of performance was on a scale of 16 items and customer satisfaction through a 9-item scale.

In a CCC environment, Ellway (2014) conducted a case study with a United Kingdom telecom to examine calls from the CCC for differences in quality and quantity of calls taken by CSRs. The assessment of calls identified opportunities to increase quality and reduce repeat callbacks by increasing the handling time for the call, resulting

in reduced quantity of calls and productivity. Through qualitative analysis, Ellway

reported that a focus on productivity resulted in decreased customer satisfaction through

necessitated repeat calls as CSRs try to reduce the handling time of their calls to meet

productivity requirements. Ellway spent 5 months observing and listening to the

telephone interactions of 13 teams handling calls for four different areas: (a) customer

service, (b) provision, (c) repair, and (d) billing. Forty-seven different individuals

participated in the research. In the CCC industry, an extreme focus on productivity is

detrimental to achieving high customer satisfaction or employee satisfaction (Mansour &

Nusairat, 2012). CSRs directed to meet productivity requirements may sacrifice quality

of service with customers to meet productivity targets.

In the public sector of the United Kingdom, Conway and Briner (2015) reported

no link between customer service time and customer satisfaction for a service

organization offering over-the-counter service. This study included 39 units within the

organization in different geographical locations. While customer queuing time did have

an impact on customer satisfaction, the length of time the customer spent with the

employee did not. The measurement of customer service time was by the average

duration spent at the counter for a period of 9 months preceding the employee survey.

The measurement of customer satisfaction was through third-party interviews of

customers leaving the stores over 1 month. The customer interviews consisted of a single

question of overall satisfaction using a 5-point Likert scale of *very dissatisfied* to *very*

*satisfied*. Conway and Briner used longitudinal data with repeated measures for the

organization and customer satisfaction metrics and had a high survey response rate of 90%.

**Customer Satisfaction**

Many organizations focus on measuring and improving customer satisfaction because of the benefits gained from having satisfied customers. According to the service-profit chain model, customer satisfaction drives customer loyalty, which in turn leads to profit and growth for the service organization (Heskett et al., 1994). Customer satisfaction is a result of customers comparing their expectations to the quality they perceived, but both expectation and perceived quality can differ from person to person due to changes in needs or prior experience (Lau & Chan, 2012). In the CCC industry, measuring customer satisfaction is a means of determining the quality of service. Customer satisfaction is different in the CCC industry compared to face-to-face encounters because of the lack of tangibles or the service environment, such as seen in the SERVQUAL model. Researchers observed this difference in achieving service quality for CCCs, compared to face-to-face encounters, in the banking industry (Malhotra, Mavondo, Mukherjee, & Hooley, 2013). However, the frontline employee self-evaluated service quality in this instance.

When using the same SERVQUAL model focused on CCC specific attributes for South African contact centers, researchers observed a positive and moderate correlation between service quality and customer satisfaction (Nyasha, Jordaan, & Rosemary, 2014). However, the correlation between service quality and customer satisfaction was not significant. With the addition of customer loyalty, customer satisfaction partially

mediated the relationship between service quality and customer loyalty using multiple regression. This relationship is similar to the service-profit chain model in that customer satisfaction drives customer loyalty through service quality.

**Customer loyalty and retention.** Increasing customer loyalty is one reason to focus on customer satisfaction (Heskett et al., 1994). A customer who is loyal to an organization will continue to purchase, increasing profitability for the organization. When customers are loyal, this continuation to purchase can occur even when switching costs are low.

Customer dissatisfaction can lead to the loss of customers, resulting in lost profits and increasing the cost of customer acquisition. Tatikonda (2013) analyzed three strategies for improving cost savings: (a) improving customer retention by 10%, (b) decreasing cost in customer acquisition by 10%, or (c) improving the cost margin on customer value. The 10% improvement in retention had a significantly larger impact on cost savings than the other two strategies (Tatikonda, 2013). Ensuring customer satisfaction and improving areas causing customer dissatisfaction leads to customer loyalty, which in turn leads to customer retention.

A proposed framework illustrating how customer satisfaction leads to customer loyalty is the American Customer Satisfaction Index (ACSI) model. ACSI provides a measurement tool to gauge overall satisfaction for customers using products and services, thus resulting in customer loyalty or complaint. In the ACSI model, the derivation of customer satisfaction is the perceived quality, value, and expectations of customers. Using longitudinal data from the hotel industry, researchers reported a significant and

positive relationship between customer satisfaction and loyalty over three nonconsecutive years of data (Kim, Cha, Singh, & Knutson, 2013). However, the results over the 3 years differed between the effects of customer perceived quality, perceived value, and expectations on the relationship between customer satisfaction and loyalty. Changes in the economy may have resulted in the difference in the customers' thoughts on quality, value, and expectations.

Wu, Zhou, and Wu (2012) examined the relationship between customer satisfaction and loyalty, as well as how commitment to a brand or service provider affects said relationship, in the telecommunications industry. This examination was through the combination of services marketing and relationship marketing theories. Wu et al. perceived that customer satisfaction did increase loyalty; however, affective and calculative commitment adjusted how satisfaction led to customer loyalty. High affective commitment occurs when customers love or trust a brand or service provider. Calculative commitment occurs when the costs of switching to another brand or service provider are too high. If the customer does not care for or trust the organization, increasing customer satisfaction did not necessarily lead to gains in customer loyalty. Also, low switching costs could drive satisfied customers to leave the organization regardless of satisfaction. While Wu et al. suggested improving affective and calculative commitment rather than improving customer satisfaction to drive increased customer loyalty, they offered no suggestions on how to improve affective or calculative commitment.

Pallas, Groening, and Mittal (2014) suggested a link between customer satisfaction and customer loyalty through increased customer delight, but dependent upon

the cost of switching. Pallas et al. separated the purchase of products and services into quadrants dependent upon high or low switching costs and high or low hedonic value. Pallas et al. suggested to try to delight customers only in industries where switching costs are low, customer choice is high, and hedonic value is high, such as hotels and clothing companies. For industries with minimal switching costs and low hedonic value, such as the banking industry, those companies should focus on removing customer dissatisfaction and not necessarily trying to delight customers.

When determining whether customer satisfaction is a cost driver or value driver, focusing on increasing customer satisfaction for profitable clients does more to increase the value of the organization than focusing on dissatisfied nonactive clients (Terpstra & Verbeeten, 2014). While an association exists between customer satisfaction and the metrics of future revenue and value, increasing customer satisfaction also comes with increased customer service costs. This focus on high-value, and therefore profitable, clients instead of all clients somewhat contradicts the service-profit chain model. Although, the focus on the retail banking industry may be a limiting factor in this study because of the progression of customers starting out with a bank account and moving into higher revenue products with age.

**Employee job satisfaction.** Following balance theory, an increase in customer satisfaction can result in increased employee job satisfaction. In the professional services industry, Frey, Bayón, and Totzek (2013) reported a link between customer satisfaction and employee job satisfaction. The authors saw a positive impact on client satisfaction on

employees' satisfaction using structural equation modeling in a dyadic field study over a cross-sectional sample of employees with clients.

Barnes, Ponder, and Hopkins (2015) observed a similar link when investigating the effect of customer delight on employee job satisfaction and performance. Based on the broaden-and-build theory, employees who strive for customer delight reap the additional benefit of also feeling delighted for themselves. Barnes, Ponder, et al. reported a positive impact on employee positive affect due to high customer delight, which in turn resulted in a positive impact on employee job satisfaction and affective commitment.

Barnes, Ponder, et al. (2015) enlisted service employees across three groups: (a) Group 1 included employees spending the majority of their time with customers, (b) Group 2 included those who worked more with customer property than with the customers themselves, and (c) Group 3 included employees who had minimal contact with customers in a consistent manner. Using a nonprobability snowball sampling technique, respondents completed an online survey resulting in 183 participants in Group 1, 138 in Group 2, and 110 in Group 3. Respondents self-rated themselves on seven areas including customer delight, employee positive affect, job satisfaction, and affective commitment.

Measurement of customer delight was across three factors using a 5-point scale of *never* to *always* with the service employee determining the number of times they perceived their customers are feeling gleeful, elated, and delighted. Measurement of employee job satisfaction was across three factors of the job being valuable, interesting, and satisfying using a 7-point scale from *strongly disagree* to *strongly agree*. Using a 7-

factor correlated measurement model, Barnes, Ponder, et al. (2015) reported that employees' view of customer delight impacted employees' feelings of delight. However, the measurement of customer delight from an employee point of view means actual customer delight may not have occurred, indicating a possible lack of customer satisfaction.

In Barnes, Ponder, et al.'s (2015) study, the majority of the respondents were from Group 1, a group who had an in-depth interaction with customers. Examples of the service interactions were financial consulting or medical interactions. While Group 3 interactions were similar to the types of interactions CSRs have with customers, the Group 3 interactions were less detailed than CCC interactions, as examples were movie theater attendants or grocery store clerks. These findings may not pertain significantly to interactions between CSRs and customers, considering those interactions are without face-to-face contact and typically shorter transactions.

**Summary**

A review of the literature revealed that studies conducted for CCCs left a gap in research on CSR characteristics having an impact on customer satisfaction because of conflicting results. Many studies did not combine the specific variables used in this doctoral study. Some studies showed a link between a specific employee characteristic and customer satisfaction while other studies did not show a significant relationship. However, the literature reviewed confirmed the selected variables for this doctoral study are appropriate to predict customer satisfaction as a relationship exists between the variables.

**Transition**

The purpose of Section 1 was to provide a background into the characteristics of CSRs or frontline employees that have an impact on customer satisfaction. The background also highlighted why measuring and increasing performance for customer satisfaction is important in the CCC banking industry. A quantitative, correlational study is the foundation for this study on determining whether the employee characteristics of CSRs can predict customer satisfaction in a linear relationship. The service-profit chain model demonstrates a positive linear relationship between employee characteristics, customer loyalty, and organization profitability (Heskett et al., 1994). The selected CSR characteristics may have an impact on customer satisfaction considering the factors in the service-profit chain model. Confirmation of the chosen characteristics occurred with the literature review.

Section 2 of the study includes a review of the purpose of the study and additional details regarding the research methods, data, and techniques used. Section 3 of the study includes the results of the study and the significance of those results to professional practice and social change. Section 3 also includes the conclusions and summary of the study.

Section 2: The Project

Section 2 outlines the project design and methodology for this doctoral study. It includes the purpose statement, a description of the role of the researcher, and the reasons for the selected research method and design. This section also includes a synopsis of the participants and a description of the population. The outline of the data collection process includes a listing of the instruments used to collect data, the data collection technique, and the analysis method for highlighting the relationship between the variables in the study. Lastly, Section 2 includes the threats to the validity of the study.

**Purpose Statement**

The purpose of this quantitative correlational study was to examine the relationship between customer satisfaction and the specific employee characteristics of tenure, training hours, empowerment, education, productivity, job satisfaction, and satisfaction with their supervisor's skills for CSRs serving the banking industry. This research purpose was achieved through the application of multiple regression. In such a linear regression model, each observation was for a specific CSR. The independent variables included that CSR's job satisfaction, productivity, tenure, education, and the internal service quality metrics of the CSR's satisfaction with their supervisor's skills, their level of empowerment, and the training they received. The dependent variable was the average customer satisfaction over time with that CSR. The targeted population consisted of customers and CSRs of CCCs servicing such customers for a large Canadian bank. The focus was only on those CSRs working for the CCCs located in Canada. The implications for positive social change included the potential to increase knowledge of

the predictors of customer satisfaction, thus demonstrating areas to focus on when hiring

CSRs. CSRs generating satisfied customers during transactions can experience less job

dissatisfaction and stress, creating amicable calls where CSRs can preserve their dignity

and feel worthwhile in their jobs.

## Role of the Researcher

The data used in this study was archival data provided by Service Quality

Measurement Group, Inc. (SQM), a research firm specializing in customer and employee

satisfaction in the CCC industry (SQM Group, 2016a). I have worked for SQM for the

last 10 years, most recently as president. My role as a researcher in this study was as an

*outsider researcher*, and not as an *insider researcher*. The definition of an outsider

researcher is a researcher who is completely withdrawn from the studied population while

an insider researcher has involvement with the population (Unluer, 2012). My

involvement with the collection of data at SQM is minimal. As president of SQM, I do

not actively participate in data collection.

The data specifically was from SQM's client, Bank XYZ (pseudonym). The data

set was a compilation of Bank XYZ's customer, employee, and operational survey

results. Bank XYZ agreed to allow SQM to provide their data for this doctoral study.

Bank XYZ was a large Canadian bank with data collected from three of their CCCs. The

data set consisted of survey results from the frontline CSRs and their customers. SQM

collected the data from Bank XYZ on an ongoing basis for other purposes. The chief

executive officer of SQM signed the data use agreement stipulating the use of this

archival data.

My duties within SQM about this doctoral study were networking with clients and overseeing research activities. While I was not directly involved with Bank XYZ, my role at SQM allowed me to have a deep understanding of the data collection process. However, having a role at SQM meant I had to be cognizant of bias or ethical issues (Unluer, 2012). My only role with Bank XYZ was to provide information and reassurances to the management of Bank XYZ to gain the use of the data in this doctoral study.

## Participants

Archival research was the basis for this study. Archival research consists of using research data that is already in existence rather than generating new data (Barnes, Dang, Leavitt, Guarana, & Uhlmann, 2015; Irwin, 2013; Whiteside, Mills, & McCalman, 2012). Archival and secondary research data are convenient when expanded topics of inquiry can use existing data. The benefits of using archival or secondary research data are that researchers can save time and money using existing resources (Whiteside et al., 2012). Also, the use of archival data is considered low-risk research as it consists of using existing data (Lo, 2014). A disadvantage of using archival or secondary research data is that it may be difficult to establish the reliability and validity of the data collection instruments as certain things may be unknown to the researcher (Barnes, Dang, et al., 2015; Johnston, 2014). Items of uncertainty include how the collection of data occurred, problems with data collection such as participant confusion or low response rate, and knowing what tests occurred for the instruments.

Since the basis for this study was archival research, no collection of data was necessary from participants. SQM provided archival data for each of the variables outlined in the regression model. The archival data was limited to only one of SQM's clients, Bank XYZ, for a subset of CSRs working for Bank XYZ's Canadian CCCs and the customers who called into the CCCs and conducted transactions with those CSRs.

## Research Method and Design

### Research Method

Several methods exist for researchers' use, predominantly categorized into three methods. The two main methods are quantitative and qualitative research methods, with the third being a combination of quantitative and qualitative called mixed methods (Frels & Onwuegbuzie, 2013; Masue et al., 2013; Poni, 2014; Venkatesh, Brown, & Bala, 2013). The research method is what determines how the researcher will compile and evaluate the data (Johnston, 2014). The proposed study used a quantitative research method. Quantitative research methods are applicable for instances of determining relationships between variables. For instance, a quantitative methodology is suitable when determining the effects of a set of independent variables on a dependent variable across a sample to infer or generalize to a larger population. The purpose of this study was to identify whether a linear relationship existed such that the characteristics of CSRs can predict customer satisfaction in the banking industry. Using MLR modeling illustrated this relationship. A quantitative methodology was suitable for this type of study because the purpose was to determine the effects of the independent variables of the employee characteristics on the dependent variable of customer satisfaction. The

restrictions of the archival data also required the use of the quantitative method. The format of the archival data was a standardized survey instrument using preformatted response categories, which requires quantitative methods (Poni, 2014; Yilmaz, 2013).

Quantitative research methods are popular methods in social sciences for the ability to provide statistically valid and accurate results (Poni, 2014). However, for consumer field research, qualitative research methods are popular compared to quantitative research methods, as it is hard to control for all variables when using quantitative methods in consumer field research, unlike when conducting consumer research in the laboratory (Payne & Wansink, 2011). Studies using qualitative research methods do not rely on the control necessary for studies using quantitative research methods. The proposed study did not use qualitative research methods, as those methods are appropriate when trying to determine why or how individuals or similar groups undergo specific circumstances. Similarly, mixed methods research methodology is suitable when one is seeking to understand the relationship between variables and the why and how of the relationship (Frels & Onwuegbuzie, 2013). Since the purpose of this study was to predict the outcome and not the general reasons why it occurred, qualitative and mixed methods research methods were not suitable for this study.

**Research Design**

The correlational design for this doctoral study utilized archival data consisting of employee metrics corresponding to the various regression variables listed in Table 1 of the Research Question subsection and described further in Table 9 of the Instrumentation subsection. Correlation research is appropriate when trying to illustrate how a set of

variables influence the changes in a single variable (Ellis & Levy, 2009). Thus, a correlational design was applicable because the purpose of this study was to determine the influence on customer satisfaction through variables based on the characteristics of the CSR servicing the customer.

A data row or observation corresponded to each CSR. The dependent variable for each observation was customer satisfaction with a CSR directly measured as the proportion of the top box score across all customer survey scores attributed to that CSR. The industry standard definition for top box is simply a 9 out of 10 or above rating for the CSR service rendered. Thus, top box is an appropriate and direct customer satisfaction measure. This study incorporated seven independent variables to predict the dependent variable, with five of those independent variables directly measurable and two of those independent variables being complex constructs each assessed separately via simple summative indices on lower-level and directly measurable variables. Specifically, the calculation of employee job satisfaction was the simple addition of the Likert scores from four Likert questions related to employee job satisfaction. Similarly, each CSR's satisfaction with their supervisor's skills was calculated by adding the Likert scores from the six Likert questions related to supervisor skills. The details of these variables are available in Table 9 in the Instrumentation subsection.

The survey instruments used to capture the dependent and independent variables were from SQM and detailed in the Appendices with permission from SQM. SQM uses their standardized customer survey with 500 contact centers on an annual basis and conducts approximately 25,000 employee surveys annually (SQM Group, 2016a). An

extensive literature review was elaborated on in more detail in the Literature Review

subsection, the identified theoretical framework of the service-profit chain model was

elaborated on in the Theoretical Framework subsection, and personal CCC management

experience assisted with the selection of each lower-level variable.

The regression modeling exercise utilized seven independent variables, five of

which are directly measured and two of which are latent variables or constructs measured

using additional measured variables, denoted by ($X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $C_1$, $C_2$), and one

dependent variable ($Y$). In total, the use of 16 variables formulated two regression model

variants for fit. MLR modeling was fitting for this doctoral study since the purpose of the

study was to determine the relationship between employee characteristics and customer

satisfaction, and infer the results to a larger population. MLR modeling considers the

level of dependency between a single variable and multiple variables (Dumitrescu,

Stanciu, Tichindelean, & Vinerean, 2012). The service-profit chain model demonstrated a

positive linear relationship between the factors of employee characteristics, customer

loyalty, and organization profitability (Heskett et al., 1997). Many studies used

correlational design when examining the variables in the service-profit chain model (e.g.

Glaveli & Karassavidou, 2011; Shaikh et al., 2012; Wu & Shang, 2013; Yavas &

Babakus, 2010). Therefore, linear regression modeling was suitable to determine the

relationship between variables proposed in the service-profit chain model.

Assessing the criteria of the scale type of the variables, the number of researched

samples, the relationship between the samples, and the number of variables used allows

for the determination of the method of data analysis (Dumitrescu et al., 2012). This

doctoral study consisted of determining whether a linear relationship existed between multiple predictor variables with a single criterion variable using continuous variables for a single sample. As such, MLR was a suitable data analysis technique to answer the proposed research question.

With multiple predictors, use of MLR can determine the overall fit of a model, and the relative contribution of each of the predictors to the total variance explained, such that the predictors with the greater regression coefficients are more important as predictors than the variables with lesser regression coefficients (Nimon & Oswald, 2013). The basis of MLR is correlational analysis, which is the analysis of the association between two variables. A correlational analysis is sufficient when determining the linear relationship between two variables. However, MLR is more appropriate for multiple variables when assessing the contribution of each variable. A correlational analysis only takes into consideration the relationship between a single predictor variable and the criterion; however, it does not take into consideration the relationships between the predictors (Kraha, Turner, Nimon, Zientek, & Henson, 2012). Since the purpose of this doctoral study was to determine whether multiple variables have a linear relationship with customer satisfaction, MLR was appropriate for this study.

## Population and Sampling

The population of this doctoral study involved frontline employees of CCCs who had a service interaction with the customers of a large Canadian bank. This population aligned with the research question, as the purpose was to determine whether a linear relationship existed between frontline employee characteristics and the satisfaction of

customers served by those employees. The sampling frame of the study consisted of frontline CSRs employed with CCCs serving Canadian banks. The archival data included customers and employees from three Canadian CCCs of Bank XYZ. While Bank XYZ had CCCs located outside of Canada, these CCCs were exclusive of the data set to restrict the geographic region studied. This study used anonymized CSR as well as anonymized customer survey scores from an archival database as a source, and as such, no involvement with human participants or need for individual consent existed. However, a data use agreement from SQM, the provider of the data, outlined the agreed upon guidelines of the use of data. A copy of this data use agreement is in Appendix A. SQM provided the data once Walden University IRB granted approval, which was under approval number 01-20-17-0264797.

The employees inclusive in the data set were those surveyed in January of 2016 who had customer surveys in February or March of 2016. The subset of employee survey responses consisted of CSRs providing frontline service to the customers of Bank XYZ. If the employee did not provide frontline service or did not have customer surveys, then the employee was not included in the sample.

The sample was a random selection of the employees within the archival data. The sample of employees selected for this analysis was a probability sample. A probability sample involves a sampling technique where the random selection of participants allows each member of the population to have a comparable chance of being included in the sample, leading to a normal distribution of estimators (Bethlehem, 2016). Using a probability sample is an important linear regression assumption so that unbiased

estimators are possible to obtain. It is thus optimal as it allows generalizations to the population, and it makes it easier to analyze the data compared to a non-random sample (Acharya, Prakash, Saxena, & Nigam, 2013). Specifically, the probability sample was through simple random sampling using a random number generator. Simple random sampling uses a list of the population where the selection of participants is through randomly generated numbers based on the finite sample size (Kandola, Banner, O'Keefe-McCarthy, & Jassal, 2014). Simple random sampling allows for the avoidance of selection bias and has high internal and external validity.

Use of G*Power 3.1.9.2 helped determine an appropriate sample size for this doctoral study. G*Power is a software package used to calculate sample sizes based on Power analysis (Faul, Erdfelder, Buchner, & Lang, 2009). *A priori analysis* allows for the calculation of the necessary sample size required by a specific statistical technique involving a given number and type of variables, and to achieve a specific significance level α, the statistical power $1 - \beta$, and the population effect size (Faul et al., 2009). The effect size is the statistic that describes the magnitude of the effect to describe the relationship between the independent and dependent variables (Kelley & Preacher, 2012). A medium effect size for MLR is .15 (Faul et al., 2009). Essentially, controlling for the three parameters of significance level, power, and effect size allows for the determination of the minimum sample size while reducing the occurrence of Type I or II error. Selecting a befitting α-value minimizes Type I error with a significance level of .05 being typical in many research studies (Kelley & Preacher, 2012; Knapp, 2015; Wiedermann & von Eye, 2015).

A review of the literature showed that all variables defined in this study had the potential to improve customer satisfaction, so including any and all of the 15 independent variables was helpful to some extent. Also, the discrete or categorical nature of certain independent variables required care when dealing with those variables. Of the 15 model variables, five were continuous variables, and 10 were categorical variables. The research utilized the General Linear Model (GLM) procedure of SPSS as explained in the next subsection. The GLM procedure required the user to designate the dependent $Y$ variable, the 10 categorical independent variables as Fixed Factors, and the five continuous independent variables as Covariates. When running GLM, it was not necessary to transform the 10 categorical variables into continuous variables utilizing dummy variables because GLM took care of this transformation automatically. However, we needed to determine the sample size based on those dummy variables. The transformation essentially creates $n$ - 1 dummy continuous variables for a categorical variable consisting of $n$ categories. The internal GLM/SPSS transformations of the 10 categorical variables into dummy variables resulted in 39 dummy variables in the model. There, five continuous and 39 dummy variables led to a 44 independent variable Model 2. Table 8 outlines the variables used in this study and the representation of those variables in SPSS.

Table 8

*Number of Variables Used in SPSS*

| Variable | Type | No. of variables in SPSS |
|---|---|---|
| $X_1$ = Employee tenure | Continuous | 1 |
| $X_2$ = Training hours | Continuous | 1 |
| $X_3$ = Empowerment | Continuous | 1 |
| $X_4$ = Employee education | Continuous | 1 |
| $X_5$ = Employee productivity | Continuous | 1 |
| $X_6$ = Supervisor skills: communication | Categorical | 4 |
| $X_7$ = Supervisor skills: commitments | Categorical | 4 |
| $X_8$ = Supervisor skills: respectful | Categorical | 4 |
| $X_9$ = Supervisor skills: resolves concerns | Categorical | 4 |
| $X_{10}$ = Supervisor skills: career development | Categorical | 4 |
| $X_{11}$ = Supervisor skills: provides feedback | Categorical | 4 |
| $X_{12}$ = Employee job satisfaction | Categorical | 3 |
| $X_{13}$ = Employee recommending as a place to work | Categorical | 4 |
| $X_{14}$ = Employee is proud to work for the company | Categorical | 4 |
| $X_{15}$ = Employee is not looking for another job | Categorical | 4 |
| $Y$ = Customer satisfaction with CSR | Continuous | |

Using the Linear Multiple Regression: Random Model test, G*Power computes a sample of 269 with an effect size of .15 when using 44 independent variables. Model 1 contained only five $X$'s and two $C$'s leading to only seven total continuous variables, thus requiring a much smaller sample than the 44-variable Model 2. Thus, the intended sample size used for both models and all hypotheses testing was a sample of 269. Figure 3 outlines the G*Power result.
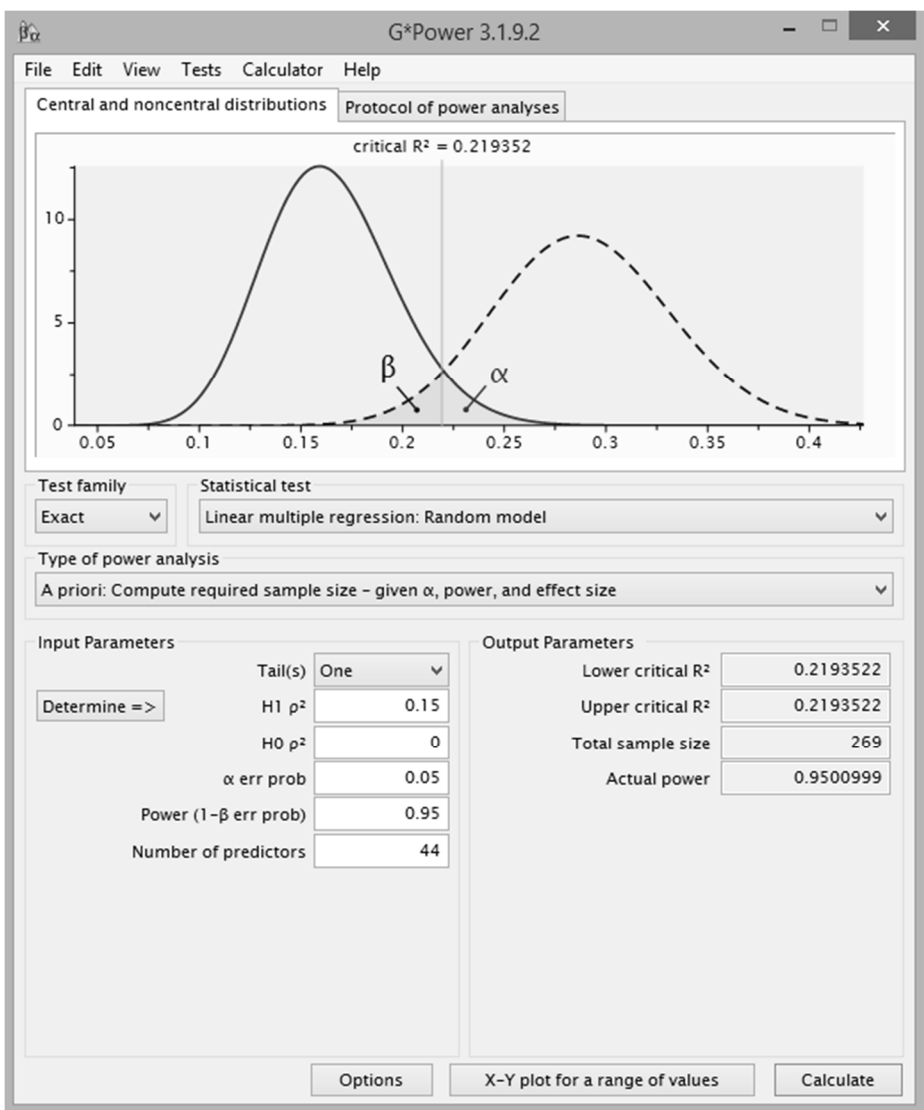


*Figure 3*. Sample size calculation using G*Power 3.1.9.2.

SQM released the archival data once the IRB approved of the data release. The archival data contained data from three sources. One source was through SQM querying an SQL database to obtain the employee characteristic data, which originated from Bank XYZ's employee survey conducted in January of 2016. The employee performance data was from a second source coming directly from Bank XYZ to SQM. The third source was through SQM querying an SQL database to get the customer satisfaction data, which originated from Bank XYZ's customer survey conducted in February and March of 2016. The data contained 396 records. This large sample allowed for a random selection of 269 employees.

To select the 269 records randomly, using Excel allows one to generate a uniform random number, $U_i$, between zero and one for each record in the archival dataset. With 500 records and a required sample size of 269, the selection of the records includes all records where $U_i$ is less than the proportion of the required sample size to the total records available, which is 0.538. Thus, the random selection of records will include each $i$-th record where $U_i < 0.538$.

### Ethical Research

As an employee of SQM, I was cognizant of any ethical issues that could occur when I received the archival data from SQM. For instance, one issue could have been a breach of confidentiality. To protect the name of SQM's client in this proposal, I addressed the client by the pseudonym of Bank XYZ and minimally described the company as needed for replication of the study to reduce the chances of identifying the company. Bank XYZ agreed to allow SQM to provide their data for this doctoral study.

All employees of SQM sign annual confidentiality agreements acknowledging the data available at SQM is highly sensitive. Bank XYZ accepted that confidentiality agreement as sufficient for the reassurance of the privacy of the organization and their data used in this doctoral study. An example of the confidentiality agreement is in Appendix B. I also signed a data use agreement with SQM to address confidentiality concerns. The data use agreement, located in Appendix A, outlines the guidelines agreed upon with SQM for using the data set. The chief executive officer of SQM signed the data use agreement stipulating the use of this archival data.

The data was also de-identified to protect the privacy of the participants. As the researcher, I addressed concerns regarding maintaining the privacy of Bank XYZ and their data. Compiling the data required several precautions to prevent any ethical issues or biases. The analyst team for SQM prepared the data to combine the employee survey results with the customer survey results for the same CSR. This type of analysis is typical for the analyst team at SQM and required no additional effort on their part. I did not have direct involvement in the compilation of the data set. The aggregation of customer survey results for each CSR protected the identity of the customers surveyed. Bank XYZ provided SQM the operational data for each CSR who had employee survey and customer survey results. De-identifying employee survey results protected the identities of the CSRs and ensured confidentiality of employee survey results.

SQM sent the names and email addresses of the CSRs who had employee survey and customer survey results to Bank XYZ. The HR department of Bank XYZ sent SQM the operational data for each CSR with identification by employee email address. SQM

analysts used the employee email address to combine the operational data with the employee survey and customer survey data. SQM removed the CSR identifier after adding the operational data to the customer-employee data set. Data submitted had a nondescript numerical value assigned to each employee's results for reference while maintaining confidentiality. Using the de-identified data set in this doctoral study protected the privacy of the survey respondents for both the customers and employees. The data is password-protected and stored on a secured and encrypted hard drive under my control. After 5 years from my completion of the doctoral study, I will delete the data.

Another consideration for ethical issues when using archival data is the consent of participants. While the use of archival data is low-risk research as it consists of using existing data, gaining consent is still a priority (Lo, 2014). Participants in this study consented to conduct the survey under specific conditions; however, participants did not necessarily know the full parameters of usage of their information. Informed consent occurs when a person who understands the risks and benefits of the study agrees to participate in the study (Greaney et al., 2012). While informed consent is a requirement for research, a broad consent can be conducive to using archival data (Irwin, 2013; Lo, 2014). However, additional consent may be required if the purpose of the data reuse goes against the parameters of the original consent or if an ethical difference exists between the data reuse proposal and the original research proposal (Steinsbekk, Myskja, & Solberg, 2013; Whiteside et al., 2012).

Consent for the use of archival data is more of a concern when data is for vulnerable populations (McKee & Porter, 2012). However, the population studied in this

doctoral study was not a vulnerable population. Consent for the SQM employee and customer surveys was broad and referenced data usage for customer service and employee improvement initiatives. SQM did not have a formal consent process with signed consent forms, as completion of customer surveys occurred over the phone within 24 hours of contact with the contact center, which makes it difficult to obtain written consent. However, the survey invitation included informing participants of the intent of the survey, the confidentiality of the participants' responses, and that participation was voluntary, which conformed to the principles of informed consent (Payne & Wansink, 2011).

While customers and employees gave consent for surveying by SQM, consent from employees for sharing individual operational data was absent. Consent for sharing administrative data can be difficult to attain if privacy or confidentiality concerns arise, especially for sensitive data such as financial information (Sakshaug, Couper, Ofstedal, & Weir, 2012). However, consent from Bank XYZ was sufficient for gathering operational data since shared data was not of a private nature and data was de-identified. Also, ethical approval by the Walden University IRB occurred before SQM released the data. The IRB approval number for this study is 01-20-17-0264797.

**Instrumentation**

The data provided was from SQM and based on three sources: a customer satisfaction survey, an employee satisfaction survey, and corresponding employee operational metrics. SQM, the survey provider, collected the data from Bank XYZ for the employees and customers. Bank XYZ provided the employee operational metrics for the

corresponding employees who completed the satisfaction survey and had customer

satisfaction surveys during the appropriate period. SQM collected and stored survey data

using their proprietary software. The data for customer and employee satisfaction came

from SQM's databases. The raw data for the study will be available upon request. The

variables in this study and the survey items used to calculate the variables are as shown in

Table 9. The Appendices have a listing of the survey questions, with the customer survey

question shown in Appendix D and the employee survey questions shown in Appendix E.

Table 9

*Survey Items Alignment and Value Calculation Method for Composite Variables*

| Variable | Item | Survey item calculation | Data type of the final variables |
|---|---|---|---|
| $X_1 =$ Tenure | From employee survey, measured in the number of years | | Ratio |
| $X_2 =$ Training hours | From the operational data for the number of hours the CSR attended service training from December 2015 and January 2016 | | Ratio |
| $X_3 =$ Empowerment | From the employee satisfaction survey using a 10-point Likert-type scale with measurements in 10% increments for the following survey question: $Q_1 =$ What percentage of your calls do you believe that you have full control over to resolve the customer's call? *0% - 10% (= 0.05), 11% - 20% (= 0.15), 21% - 30% (= 0.25). 31% - 40% (= 0.35), 41% - 50% (= 0.45), 51% - 60% (= 0.55), 61% - 70% (= 0.65), 71% - 80% (= 0.75), 81% - 90% (= 0.85), 91% - 100% (= 0.95)* | $X_3 = Q_1$ | Interval |
| $X_4 =$ Education | From the employee satisfaction survey using an 11-point Likert-type scale with measurements in one-year increments from *10 or less* to *20 or more* for the following survey question: $Q_2 =$ How many years of education do you have? *10 or less (= 10), 11 (= 11), 12 (Completed High School) (= 12), 13 (Some College) (= 13), 14 (Completed College or Associate degree) (= 14), 15 (Some University) (= 15), 16 (Completed Bachelor's degree) (= 16), 17 (Some graduate studies) (= 17), 18 (Completed Master's degree) (= 18), 19 (= 19), 20 or more (= 20)* | $X4 = Q_2$ | Interval |
| $X_5 =$ Productivity | From the operational data for the average number of calls taken per day, averaged between December 2015 and January 2016 | | Ratio |

(continued)

| Variable | Item | Survey item calculation | Data type of the final variables |
|---|---|---|---|
| $C_1 =$ Employee satisfaction with their supervisor's skills | From the employee satisfaction survey using a 5-point Likert-type agreement scale to measure of *strongly disagree* (=1), *somewhat disagree* (=2), *neutral* (=3), *somewhat agree* (=4), and *strongly agree* (=5) for the following survey questions: <br> $Q_3 =$ My direct supervisor effectively communicates goals and objectives <br> $Q_4 =$ My direct supervisor keeps his or her commitments <br> $Q_5 =$ My direct supervisor treats me with respect <br> $Q_6 =$ My direct supervisor takes appropriate action to resolve my concerns <br> $Q_7 =$ My direct supervisor takes a personal interest in my career development <br> $Q_8 =$ My direct supervisor gives me feedback that helps me improve my performance | $C_1 = Q_3 + Q_4 + Q_5 + Q_6 + Q_7 + Q_8$ | Interval |
| $C_2 =$ Employee job satisfaction | From the employee satisfaction survey using various Likert-type scales for the following survey questions: <br> $Q_9 =$ Overall, how satisfied are you working at the Customer Contact Centre? *Very dissatisfied* (=1), *somewhat dissatisfied* (=2), *somewhat satisfied* (=3), *very satisfied* (=4) <br> $Q_{10} =$ How likely are you to recommend the Customer Contact Centre as a place to work? *Definitely will not* (=1), *probably will not* (=2), *might or might not* (=3), *probably will* (=4), *definitely will* (=5) <br> $Q_{11} =$ I am proud to work for Bank XYZ *Strongly disagree* (=1), *somewhat disagree* (=2), *neutral* (=3), *somewhat agree* (=4), *strongly agree* (=5) <br> $Q_{12} =$ I rarely think about looking for a new job with another company *Strongly disagree* (=1), *somewhat disagree* (=2), *neutral* (=3), *somewhat agree* (=4), *strongly agree* (=5) | $C_2 = Q_9 + Q_{10} + Q_{11} + Q_{12}$ | Interval |

(continued)

| Variable | Item | Survey item calculation | Data type of the final variables |
|---|---|---|---|
| $Y =$ Customer satisfaction with the CSR | The proportion of the top box rating from the customer satisfaction survey using a 5-point Likert-type scale to measure for the following survey question:<br>$Q_{13} =$ How satisfied were you with the customer representative who handled your call?<br>*Very dissatisfied* (=1), *somewhat dissatisfied* (=2), *somewhat satisfied* (=3), *very satisfied* (=4) | $Y = Q_{13}$ | Ratio |

Use of archival data can make it difficult to establish the reliability and validity of the data collection instruments if the data collection instruments and processes are unknown. Typically, the use of existing data can be a major disadvantage if certain elements are unknown to the researcher, such as how the collection of data occurred or if problems existed with data collection regarding participant confusion or low response rate (Johnston, 2014). For reliability, using archival data means it is often unknown of what tests occurred for the instruments (Barnes, Dang, et al., 2015). However, being an employee of SQM allowed insights into the data collection instruments and processes. As well, consultation with SQM's analysts addressed any questions during the analysis.

**Reliability**

In any sound research study, the data collection instruments need to be reliable. Reliability is when using the measuring instrument continues to result in similar outcomes for participants where circumstances have not changed (Ellis & Levy, 2009; Gadermann, Guhn, & Zumbo, 2012; Oluwatayo, 2012). In quantitative research, reliability means the ability to replicate the results and is a confirmation that the inferences from the results are valid (Oluwatayo, 2012). The four types of reliability are

equivalency, stability, inter-rater, and internal consistency (Ellis & Levy, 2009).

Equivalency reliability occurs when the measurement of one instrument matches the

measurement of another instrument and establishment of equivalency reliability is

through statistical correlations using Pearson's *r* for linear correlation or Eta for non-

linear correlation. Stability reliability, measured through statistical correlation similar to

equivalency, occurs when the instrument produces the same results over time. Inter-rater

reliability occurs when the instrument produces similar results for two or more

participants and is established using statistical correlations similar to equivalency.

Internal consistency reliability occurs when the results for similar questions in the

instrument are consistent with measurement through statistical correlations using

Cronbach α.

SQM had been in business since 1996 and conducted tracking of customer and

employee experience using surveys collected daily (SQM Group, 2016a). If the results

from SQM's surveys were not reliable, then unexplainable differences would result when

SQM analyzed tracking results. As an employee of SQM who worked in the analyst

department for 5 years, I knew that these differences did not occur during analysis. Also,

SQM had many clients who are Fortune 500 companies (SQM Group, 2016b). If SQM's

data collection techniques were not reliable, the company would not experience a 95%

client retention rate (SQM Group, 2016a). Over the many years of SQM using their data

collection instruments for measuring customer and employee experience, SQM had

established reliability for equivalency, stability, and inter-rater types of reliability.

For internal consistency, SQM completed many studies with multiple questions related to the customer's experience with the CSR. SQM's previous analysis had shown strong correlations between the single question for satisfaction with the CSR and the questions specific to CSR performance. Specifically, the traits that showed the most correlation with the satisfaction of the customer with the CSR was the CSR's helpfulness, caring about the customer's issue, decision-making abilities, knowledge, and ability to resolve the customer's issue.

**Validity**

The validity of the data collection instrument is necessary to ensure the instrument is measuring the intended results. Showing validity allows the researcher to determine where the research may go wrong (Ellis & Levy, 2009; Oluwatayo, 2012; Venkatesh et al., 2013). Validity is an indication that the results and conclusions made from the research are accurate by what happens across the true population. Some examples of internal validity are content and criterion-related validity. Content validity is whether the instrument accurately conveys what is measured. Criterion-related validity is whether the instrument produces results that provide a realistic portrayal of the population and is not explainable by chance.

For content validity, SQM conducting on-site visits and focus groups with CSRs and supervisors contributed to the validation of SQM's data collection instruments for the employee experience survey. Top box results for satisfaction in the various areas of the survey were consistent with feedback garnered during focus groups. For the customer satisfaction survey, qualitative feedback validated the satisfaction question with the CSR

in the form of the question, "Why are you [rating response] with the customer representative who handled your call?" Feedback was representative of satisfaction results.

## Data Collection Technique

This study employed the use of archival data. Archival and secondary research data are convenient to use when data exists to use for other research purposes as it can save time and money (Irwin, 2013; Whiteside et al., 2012). SQM provided the archival data after IRB approval and gave permission to use the data, as shown in Appendix A. The analyst department at SQM compiled the data and provided the descriptions of the data supplied. Data provided was in a .CSV format such that import into SPSS was available. The .CSV data joined or combined the customer survey results with the employee survey results and employee operational information. Also, the records only pertained to Bank XYZ since this was the focus of the survey analysis. The electronic file of the supplied data was password-protected. A copy of the password-protected data file will reside on a separate hard drive for at least 5 years after the completion of the doctoral study as a backup the data file. The release of data from SQM occurred once the Walden University IRB granted permission.

The employee data was a subset of the employee surveys conducted for Bank XYZ on an annual basis for their frontline and back-house employees. The collection of employee surveys for Bank XYZ was through a web-based survey using an invitation sent directly to the employee's work email address and conducted on an annual basis.

Data collection for the employees was in January of 2016. Based on initial information, there were approximately 500 records available.

The customer data was a subset of customers served by CSRs, focusing on only those customers served by CSRs who completed the employee survey within the two months after the data collection period for employee survey, which was February and March of 2016. Selection of customers for surveying was through random selection using contact files of customers who called Bank XYZ's CCC, provided by Bank XYZ to SQM every six hours. Contact of customers was between 9:00 AM and 8:00 PM local time weekdays and 10:00 AM to 6:00 PM local time on Saturday. These contact files included customers who were eligible for surveying by calling Bank XYZ within the previous business day before the survey. The contact file had records removed for customers previously surveyed within the last 6 months or customers who requested placement on SQM's "do not contact" list. Customers duplicated in the daily call file had all records, but the most recent call removed, such that the latest call information was available for contacting to conduct the survey. The timestamp specified for those duplicate records determined the most recent call.

The call record included the name of the CSR who served the customer on record to attribute the survey to the appropriate CSR. The collection of customer surveys for Bank XYZ was through a telephonic interactive voice response (IVR) survey method. An IVR survey is an automated survey where participants hear the aural presentation of the survey questions and responses over the telephone, and then participants use the

telephone keypad to respond (Stern, Bilgen, & Dillman, 2014). Vocalization of responses was such that 1 was the highest rating (i.e. *very satisfied*).

## Data Analysis

The research question for this doctoral study was whether a linear regression model could predict customer satisfaction with a CSR given the CSR's personal characteristics. A reminder from Section 1 that the null hypotheses for this doctoral study are as follows:

Model 1 - $H_{0a}$: The linear combination of tenure, training hours, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction will not significantly predict customer satisfaction.

Model 2 - $H_{0b}$: The linear combination of tenure, training hours, empowerment, education, productivity, supervisor skills: communication, supervisor skills: commitments, supervisor skills: respectful, supervisor skills: resolves concerns, supervisor skills: career development, supervisor skills: provides feedback, job satisfaction, recommending, proud to work, and commitment will not significantly predict customer satisfaction.

For each pair of independent variable $X_i$ or construct $C_i$ and $Y$, the lower level null hypotheses are:

$H_{0i}$: $R(Y \mid X_i) = 0$; independent variable $X_i$ does not significantly predict $Y$.

$H_{0i}$: $R(Y \mid C_i) = 0$; independent variable $C_i$ does not significantly predict $Y$.

Testing of the null hypotheses and research question will be via MLR. MLR is a statistical technique used to determine the importance of multiple variables in predicting

another variable. MLR is an extension of simple linear regression, also known as regression analysis, which only uses one predictor variable. Thus, it is MLR when using more than one predictor variable. Typically, regression analysis refers to MLR.

Regression analysis is one of the most widely used statistical procedures for analyzing multifactor data. The purpose of using regression analysis is to estimate the relationship between variables. Regression analysis is popular amongst researchers as it is applicable for analysis of many types of problems. Many researchers know the implications of the assumptions for regression analysis, making regression analysis easy to interpret. MLR also helps researchers determine the degree of the relationship of multiple variables together on a single variable. The degree of the relationship allows researchers to determine which factors have the most effect on the variable, which explains variation in the relationship.

Regression analysis is also a popular method amongst researchers when analyzing results related to the service-profit chain model and other areas of research about employee or customer satisfaction. Regression analysis is suitable for studies when the theoretical framework is the service-profit chain model as the relationship between the variables is linear. In the banking industry, many studies used regression analysis to investigate the links in the service-profit chain model (e.g. Glaveli & Karassavidou, 2011; Shaikh et al., 2012; Wu & Shang, 2013; Yavas & Babakus, 2010). These links included one-to-one variable investigation using correlation analysis or multiple variable investigations using MLR.

Several studies in the CCC industry used either correlation analysis or MLR, or both methods (e.g. Mansour & Nusairat, 2012; Nyasha et al., 2014; Shamsuddin & Rahman, 2014). Mansour and Nusairat (2012) used correlations and MLR to study the effect on service quality of affective commitment, continuous commitment, normative commitment, job involvement, and job satisfaction. In their study, of the 515 surveys distributed to CSRs, 266 returned surveys resulted in 248 useable surveys for analysis. Correlation analysis showed affective commitment as having the highest correlation with service quality. Use of OLS for MLR resulted in showing the employee attitude variables had a significantly positive effect on service quality.

Nyasha, Jordaan, and Rosemary (2014) used MLR to study the relationship between customer satisfaction and employee characteristics for a CCC. The study consisted of data from a South African CCC servicing customers from the Eastern Cape Province of South Africa. Measurement of customer satisfaction was through a face-to-face or self-administered survey using a shopping-mall intercept method. The survey basis was the SERVQUAL Model with 18 questions in total after the removal of the questions with tangibles, leaving the measurements of reliability, responsiveness, assurance, and empathy. The employee characteristic variables were from the questions of "anticipating customer request, offering explanations, educating customers, and providing emotional support" (Nyasha et al., 2014, p. 400). Restrictions to complete a survey were the use of a CCC in the last 12 months and the demographics of being the minimum age of 21, employed with a steady income, and literate. Nyasha et al. achieved a response rate of 82.5% with 165 questionnaires used out of the 200 distributed.

The use of simple regression analysis showed a moderately, significant positive relationship between customer satisfaction and employee characteristics (Nyasha et al., 2014). The use of multiple regression analysis demonstrated a relationship existed between customer loyalty, customer satisfaction, and service quality levels. Customer satisfaction partially mediated the relationship between the quality of service provided by CSRs and customer loyalty.

Other regression analysis studies used moderating variables as well. Shamsuddin and Rahman (2014) used MLR in their quantitative study to determine the relationship between various variables about emotion and job performance in the CCC industry. Gender was a moderating variable in the relationship. Of the 170 CSRs, 118 participated in the study. Simple linear regression on each emotion variable with job performance indicated which variables had a strong relationship with job performance. Use of MLR demonstrated the predictive ability of the emotion variables on job performance.

**Overview of Ordinary Least Squares and its Application**

Using simple linear regression, if $y$ is the dependent variable and $x$ is the independent variable, then the relationship between $x$, and $y$ is:

$$y = \beta_0 + \beta_1 x + \varepsilon \qquad\qquad (1)$$

In Equation 1, $\beta_1$ is the regression coefficient, and $\varepsilon$ is the error term or residual (Elff, 2014). The value of $\beta_1$ is such that for every increase by one unit of $x$, the value of $y$ increases by $\beta_1$. The regression coefficient provides an estimate of the effect of changes in $y$ because of $x$. The $\varepsilon$ in Equation 1 is the difference between the observed values of $y$ and the predicted values of $y$ based on the independent variable $x$. This error occurs because

the prediction of the observed value is not precise. Regression analysis estimates the best-fit line such that *x* predicts *y*. The most common method of determining the best-fit line for the linear relationship between *x* and *y*, in other words calculating the regression coefficient $\beta_1$, is to choose the line that minimizes the sum of the squared errors (*SSE*). This method of regression is ordinary least squares (OLS) regression.

The OLS estimator has the lowest variance of all linear unbiased estimators (Elff, 2014). When calculating the regression coefficient using OLS, three properties exist for the estimator (Williams, Grajales, & Kurkiewicz, 2013). These three properties are:

- If the expected value is the same as the true parameter value in the population, then the estimator is unbiased and systematic bias is not a concern as the true parameter is not over- or underestimated.

- If the estimate converges to the true value of the parameter as sample size increases, then the estimator is consistent, and accuracy of the estimator improves with increased sample size.

- The estimator is efficient as the variance is the smallest of all linear unbiased estimators and therefore is the most accurate of all unbiased estimators for the given parameters.

Regression analysis can also describe the linear association between two variables. The linear association shows how well the independent variable has explained the dependent variable. The degree of linear association between the independent variables and the dependent variable is the correlation coefficient, denoted as *r*. The value of *r* is always between -1 and +1 with the value being closer to +1 or -1 when a stronger

correlation exists between the variables, and *r* being closer to zero when no association

exists between the variables. The value of *r* is positive when a positive correlation exists

and negative when a negative correlation exists. A positive correlation is where the value

of *y* increases when the value of *x* increases. A negative correlation is where the value of

*y* decreases when the value of *x* increases.

When trying to determine how close the line is as an appropriate estimate of the

linear relationship between *x* and *y*, it helps to evaluate the goodness of fit of the

regression line, which is when the line minimizes the *SSE* (error sum of squares). This

measure of relative closeness is the coefficient of determination, denoted as $r^2$. As

denoted, the coefficient of determination is the square of the correlation coefficient, *r*.

The value of $r^2$ describes the percentage of the total variation in *y*. If all of the observed

values of *x* fell on the regression line such that all were equal to the predicted values, then

$r^2$ is equal to one. The closer $r^2$ is to zero, the less the variable *X*, the independent

variable, explains the variation in *Y*, the dependent variable.

**Overview of multiple linear regression.** With MLR, two or more independent

variables predict the value of the dependent variable. For example, if we have *n*

observations of data indexed by $i = 1,\dots, n$ and each measured historically across a

dependent variable *Y* and *m* independent variables $X_i$ with $i = 1,\dots,m$, then the equation

for *Y* using MLR is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_i X_{mi} + \varepsilon_i, \text{ for } i = 1, \dots, n \tag{2}$$

The $\varepsilon_i$ is the error term for the *i*-th observation and represents the difference

between the actual $Y_i$ and the predicted $Y_i$. The regression coefficient vector $\boldsymbol{\beta} = (\beta_1,\dots,$

$\beta_n$) is chosen to minimize the variance of the errors in the prediction. OLS estimates the coefficient vector $\boldsymbol{\beta}$ such that the residual sum of squares is minimized (Elff, 2014; Nimon & Oswald, 2013; Williams et al., 2013). The $\boldsymbol{\beta}$ are equal to the correlations between $Y$ and each $X_i$ when every other $X_i$ is held fixed, in other words, equal to the zero-order correlations between $\boldsymbol{X}$ and $\boldsymbol{Y}$. The regression coefficient is an estimate of the true regression parameter for the population.

Use of MLR can determine the overall fit of a model and explain the relative contribution of each of the predictors to the total variance. However, MLR cannot determine causal relationships between the variables (Elff, 2014). When determining the relative contribution of each of the predictors to the total variance explained, the predictors with the greater regression coefficients are more important as predictors than are the variables with lesser regression coefficients (Nimon & Oswald, 2013). This is only true if multicollinearity does not exist. Multicollinearity occurs when a correlation exists between the predictors in $\boldsymbol{X}$.

Three types of regression are simultaneous (otherwise known as standard or traditional linear), stepwise, and hierarchical (Hopkins & Ferguson, 2014; Nathans, Oswald, & Nimon, 2012; Ray-Mukherjee et al., 2014). The main difference between these types of regression is the order selected when adding the independent variables into the regression model. Simultaneous regression considers the effect of all independent variables on the dependent variable at the same time but does not allow for control over the order of the variables. The regression coefficients can help determine which independent variables have an effect on the dependent variables. Stepwise regression

automatically adds (forward stepwise) or subtracts (backward stepwise) the independent variables to find the best set of variables to predict the dependent variables. This selection depends on which independent variable contributes the greatest to the variance of the dependent variables but does not allow for control in selecting which independent variables should be in the regression model, and thus may increase Type I error from exaggerated $F$-values. Hierarchical regression allows one to add the independent variables in a specific order and allows for the use of control variables. However, hierarchical regression can miss multicollinearity and does not look at the relative importance of the independent variables.

**Application of multiple linear regression.** The data for analysis consisted of interval and ratio variables. Tenure, training hours, and productivity were ratio variables. Tenure was a numerical variable in the form of an integer with a minimum value of 0 and a maximum value of 26. Training hours and productivity were numerical variables in the form of an integer with a minimum value of 0 and no maximum. Education, empowerment, employee satisfaction with their supervisor's skills, and employee job satisfaction were interval variables. Education was a numerical variable in the form of an integer with a minimum value of 10 and a maximum value of 20. Empowerment was a numerical variable in the form of a rational number with a minimum value of 5 and a maximum value of 95, in other words from 5% to 95%.

While the data for employee satisfaction with their supervisor's skills and employee job satisfaction were measured using Likert scales and were thus ordinal, the summation of the Likert values to form a composite variable allowed the analysis of the

predictor variables as interval data. Employee satisfaction with their supervisor's skills

was a numerical variable in the form of an integer with a minimum value of 7 and a

maximum value of 35. Employee job satisfaction was a numerical variable in the form of

an integer with a minimum value of 4 and a maximum value of 19. When creating

composite variables from secondary data, it is important to ensure no scales are reverse-

coded (Andersen, Prause, & Silver, 2011). To compute the constructs, use of SPSS

allowed for the transformation of the required variables. Figure 4 shows an example of

the construction of employee job satisfaction with four variables summed using Compute
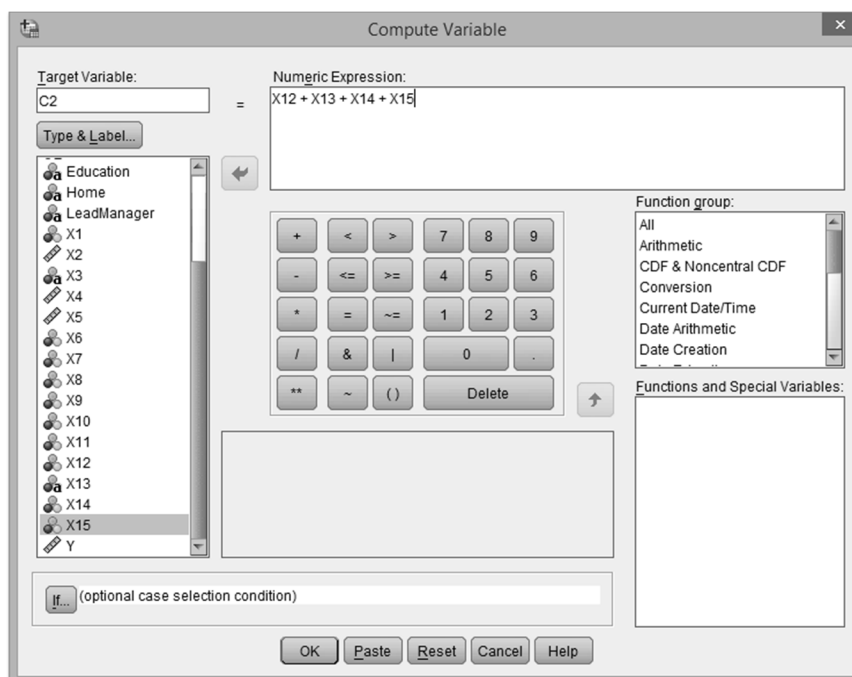
Variables, found under the Transform menu.



*Figure 4*. SPSS options for computing construct variables.

The dependent variable of customer satisfaction was a ratio variable using the proportion

of the top box (*very satisfied*) responses, making the dependent variable a numerical

variable in the form of a rational number with a minimum value of 0 and a maximum value of 1, that is, from 0% to 100%.

Since the analysis was of multiple interval and ratio variables, MLR was conducive to the analysis. The application of MLR required a series of steps. The first step was outlier detection and descriptive data analysis. Also, MLR required the testing of several a priori assumptions. The analysis utilized SPSS version 21 with details explained next.

**Descriptive statistics and outlier detection.** To analyze the data, use of SPSS software showed descriptive and inferential statistics with the provided archival data. SPSS allowed for reporting of descriptive statistics for mean, mode, range, maximum, minimum, and standard deviation as well as assumption testing using kurtosis, skew, and normality testing. Figure 5 outlines the Options for selection in SPSS when conducting the required descriptive statistics using the Analyze > Descriptive Statistics > Descriptives menu item.
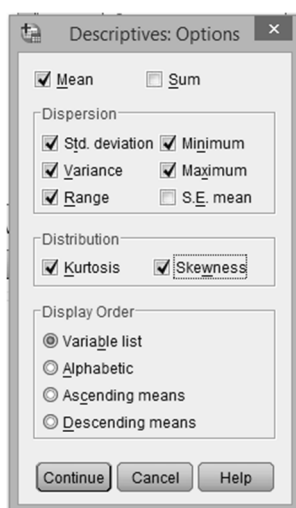


*Figure 5*. SPSS options for descriptive statistics.

SPSS also dealt with the issue of missing data. Secondary and archival data often has missing data. Determining suitability of secondary and archival data sources includes checking for missing data and inaccurately recorded data (Barnes, Dang, et al., 2015). The addressing of missing data was through the removal of any employee who did not have all the variables under consideration before conducting the analysis. Deleting a record with missing data is a typical approach assuming the data is missing completely at random. Data that is missing completely at random is a record where the situation that caused the missing data is independent of all variables measured in the survey (Andersen et al., 2011; Bethlehem, 2016; Heggestad, Rogelberg, Goh, & Oswald, 2015). Missing data resulted in discarding the record since the provided data was archival unless retrieval of data came from another source, such as tenure. However, too many record deletions may cause concern due to a reduction in sample size and the possibility of missing data not being random. In SPSS, use of Missing Value Analysis, under the Analyze menu item, can show whether a high percentage of values are missing from required variables. Table 10 outlines an example output for Missing Variable Analysis.

Table 10

*SPSS Hypothetical Output for Missing Variable Analysis*

| | | Missing | |
| --- | --- | --- | --- |
| Variable name | *N* | Count | Percent |
| Tenure | 500 | 0 | .0 |
| Education | 480 | 20 | 4.0 |
| Empowerment | 490 | 10 | 2.0 |

Outlier detection is necessary when using MLR. Outliers can skew the results of the data, cause non-normality, and may be an indication of measurement or error when inputting data (Osborne, 2013; Williams et al., 2013). Simple methods to determine outliers include the visual inspection of various plots such as histograms, scatterplots, Q-Q plots, and standardized residual plots, as well as boxplots that assess values plus or minus three standard deviations from the mean (Akoglu, Tong, & Koutra, 2015; Dawson, 2011; Leys, Ley, Klein, Bernard, & Licata, 2013; Williams et al., 2013). More complicated outlier detection schemes that assess the influence of specific data points exist when used in the context of linear regression, such as Cook's distance. However, one must take care when removing outliers or when adjusting the raw data as such actions may bias results, which in turn could result in an inaccurate estimate of the relationship between the variables (Terpstra & Verbeeten, 2014; Williams et al., 2013). For this doctoral study, I used boxplots to detect possible outliers for the nominal and ordinal independent $X$ variables. After performing descriptive statistics, outlier detection, and missing data analysis, the data needed checking to ensure it met the assumptions of MLR before conducting the statistical technique.

**Assumptions of multiple linear regression.** Use of MLR relies on the meeting of several assumptions. Otherwise, estimates for the significance may be over- or underestimated, and the estimate of the relationship may be biased. Dumitrescu, Stanciu, Tichindelean, and Vinerean (2012); Elff (2014); Kraha, Turner, Nimon, Zientek, and Henson (2012); Nimon and Oswald (2013); Osborne (2013); and Williams, Grajales, and

Kurkiewicz (2013) discussed the assumptions when using and interpreting MLR. The assumptions necessary for MLR are:

- the error terms having normal distributions,

- a linear relationship existing between the variables,

- measuring the variables without error,

- homoscedasticity,

- no multicollinearity, and

- exogeneity of the independent variables.

The statistical theory behind regression analysis requires the first four assumptions listed. The Gauss-Markov theorem allows OLS to give the best linear unbiased estimator when meeting these four assumptions. The final two assumptions allow for conclusive results when using regression analysis.

*Normal distribution.* When the sampling distribution is normal, confidence intervals or significance tests allow researchers to make inferences about the value of the given regression parameter. Thus, assessment of the independent and dependent variables is necessary to see if the variables follow a normal distribution. When working with small sample sizes, the normal distribution assumption is valid upon the assumption of normally distributed model errors, or the $\varepsilon_i$. Generally, the parameters of the true regression model are unknown and, therefore, the errors not directly measurable; however, calculation of the residuals of the regression model can help determine the properties of the errors. The residuals are the differences between the observed values of the response variable and the predicted values by the estimated regression model. One

reason for examining whether the residuals have a normal distribution is to determine if erroneous cases, or outliers, exist. Non-normality of residuals could indicate an issue with the data. If non-normality of the data still exists after cleaning the data, then a transformation of the variables may result in the normality of the residuals.

As the sample increases, the sampling distribution of the coefficients will approach a normal distribution as per the central limit theorem. Thus, regression is relatively robust to the assumption of normally distributed errors, however normally distributed errors are not required to achieve unbiased and consistent regression coefficients. When normal distribution occurs for the errors, OLS is the most efficient of all unbiased estimators. However, when there are non-normal errors, OLS is the most efficient in the class of linear unbiased estimators. Thus, non-normal errors may mean that $t$ and $F$ statistics may not follow $t$ and $F$ distributions. Data from social science research may often breach the normality restriction for the residuals but may result in no consequences.

A quantile-quantile plot can detect normality of the residuals. A quantile-quantile plot has the quantiles of the observed residuals on one axis and the quantiles of the standard normal distribution on the other axis. Normal distribution of the residuals occurs if the scatterplot forms a straight line.

*Linear relationship.* Use of MLS assumes a linear relationship between the predictor variables and the response variable. The linear relationship implies that one standard deviation change in any of the parameter values results in the same change to the dependent variable. If no linear relationship exists, then the OLS estimator cannot

give an estimate of the regression parameters. Therefore, the expected value of the

parameter cannot equal the population value of the parameter. In these cases, use of a

linear model is inadequate to describe the relationship between the dependent variable

and the independent variables.

Several tests exist to test for linearity between the dependent variable and the

independent variables. The lack-of-fit test determines lack of linearity by separating the

*SSE* into the pure *SSE* and a lack-of-fit sum of squares. If the lack-of-fit sum of squares

indicates a lack of linearity, graphical methods can indicate where the issue of

nonlinearity occurs. Graphing scatterplots of the dependent variables with each of the

independent variables can show a negative or positive linear relationship between the

variables. Superimposing a locally weighted scatterplot smoother, or lowess, fit line that

generates a line following the points in the data demonstrates whether a linear

relationship exists.

If the divergence from linearity between the variables is too small to verify with

the scatterplot graphs, then graphing the residual and partial residual plots can help with

determining linearity. Once again, residuals are the difference between the observed

value of the data and the predicted value. If the graphs of the residual versus the

independent variables, for each variable, is not linear then nonlinearity may pose a

problem.

***Measured without error.*** Measurement error occurs when the observed result

differs from the actual result expected by the respondent. If errors occur during the

measurement of the variables, then a bias may influence the correlation coefficients

upwardly or downwardly, resulting in incorrect estimates of the actual relationships between the variables. While making adjustments can correct for measurement error, the adjustments could result in worst estimates of the relationship between the variables than without the adjustment. If measurement error is a concern, modern latent variable modeling techniques, such as structural equation modeling, may be a better choice for analysis.

*Homoscedasticity.* Homoscedasticity means the variance of residuals is the same across all levels of the independent variables such that a constant variance exists within each level of the predictors. If a difference is present in the variance of errors for different values of the independent variable, then this is heteroscedasticity. Some heteroscedasticity is fine in MLR and will have little effect on significance tests. However, if large differences occur in the variance of errors across all levels of the independent variable, then the possibility of Type I error exists and potentially a skewing of the results.

A graph of the residuals against the predicted values of the dependent variable or independent variables can confirm the occurrence of homoscedasticity. If a random distribution of the dots in the scatterplot occurs, then homoscedasticity does not exist. However, if the dots of the scatterplot produce a funnel, then this would indicate a nonconstant variance. Use of studentized residuals may more easily indicate the presence of homoscedasticity. Studentized residuals are equal to the residuals divided by an estimate of their variance. Use of White's test can also detect homoscedasticity.

Transformation of the variables can remove homoscedasticity or use of weighted least squares estimation instead of OLS.

   *Multicollinearity.* Multicollinearity occurs when non-zero correlations exist between the predictor variables. Multicollinearity is an issue when explaining the relative contribution of each of the predictors to the total variance. In other words, if the intention is to determine how important each regressor is in the model, then addressing the degree of multicollinearity is necessary. When the independent variables are multicollinear, then the regression coefficient for one of the collinear variables may be close to zero as the correlated independent variable may be taking the weight of the importance of the dependent variable.

   Methods of determining multicollinearity are to calculate the correlation coefficients, beta weights, structure coefficients, all possible subsets regression, commonality analysis, dominance analysis, and relative importance weights. Correlation coefficients may not completely highlight multicollinearity, as the Pearson $r$ is reliant heavily on the sample and may change with differences in the sample. Beta weights change with the removal of predictor variables and may not be accurate unless the linear equation is a representation of all the true variables. Use of structure coefficients with beta weights can provide more information regarding multicollinearity. Use of ridge regression or principal components regression can remove multicollinearity as an obstacle.

   When detecting multicollinearity using SPSS, the descriptive statistic output gives the covariance matrix, which shows the Pearson's correlation coefficient, $r$, between each

set of predictor variables. Sets of predictor variables with an $r > .9$ are highly correlated, resulting in an assessment of collinearity between those variables. In SPSS, an inspection of variance inflation factor (VIF) values can also indicate multicollinearity if the VIF is over 5 or 10 (Hopkins & Ferguson, 2014).

***Exogeneity of independent variables.*** The exogeneity of independent variables means no independent variables correlate with the error term for any combination of independent variables. Including only pertinent variables in the linear model achieves exogeneity. Also, all variables included in the linear model must have a linear relationship with the dependent variable.

**Testing of assumptions.** The use of several graphs can determine whether the data meets the assumptions of normality, linearity, and homoscedasticity. A quantile-quantile plot can detect normality of the residuals (Williams et al., 2013). In SPSS, this would be using a Normal Q-Q Plot of the studentized residuals. Normal distribution of the residuals occurs if the scatterplot forms a straight line. Also, graphing a histogram and a Normal P-P plot in SPSS can help identify normality. The partial regression plots can help identify linearity between the dependent variable with each of the independent variables. These graphs are available in SPSS under the Linear Regression analysis tool. Figures 6 and 7 show examples of the histogram and normal P-P plots.
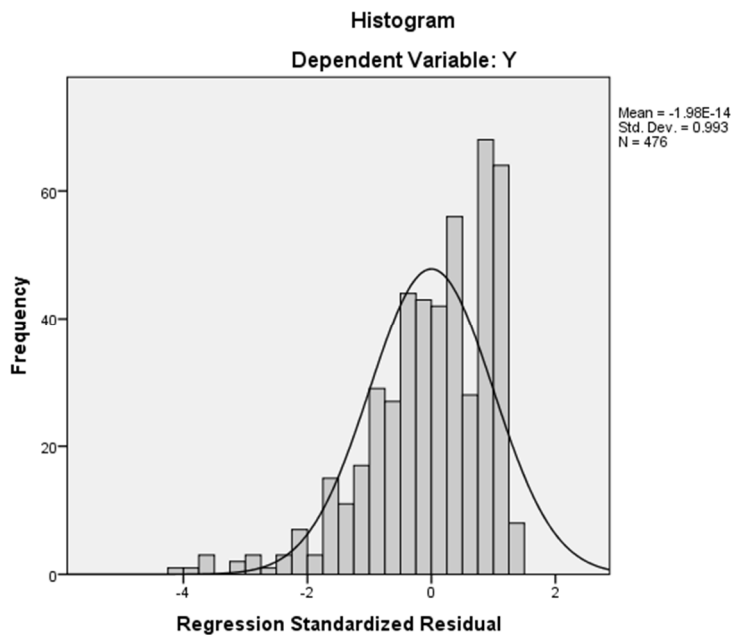
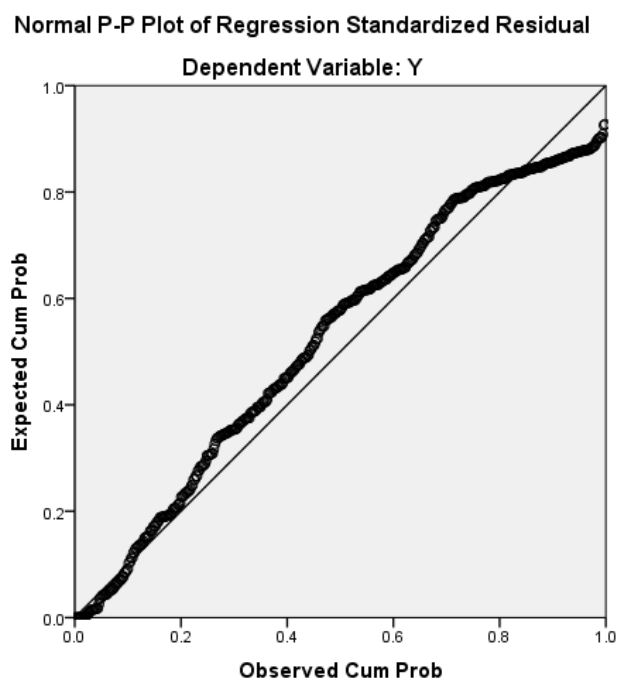*Figure 6*. SPSS hypothetical output of histogram for normality testing.



*Figure 7*. SPSS hypothetical output of normal P-P plot for normality testing.

Partial regression plots of the dependent variable with each of the independent variables can show a negative or positive linear relationship between the variables, as shown in Figure 8. These plots can help determine the linear relationship between the dependent variables and each of the independent variables. A visual analysis of the plots for each of the variables can indicate whether a linear or nonlinear relationship exists.
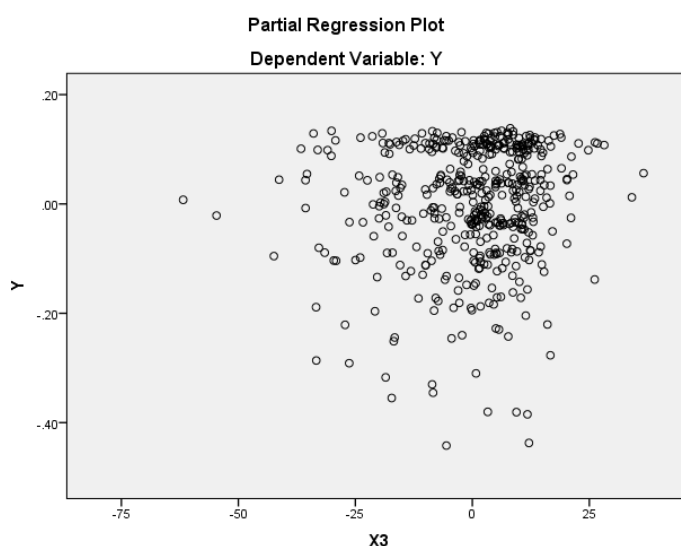


*Figure 8*. SPSS hypothetical output of a partial regression plot.

To determine the linear relationship between the variables collectively, use of SPSS can show a scatterplot of the studentized residuals against the unstandardized predicted values. The addition of these values to the data is through the Save option from the menu Analyze > Regression > Linear. The studentized residual will add as SRE_1, and the unstandardized predicted value will add as PRE_1. A graph of the studentized residuals against the unstandardized predicted values can also confirm the occurrence of homoscedasticity. If a random distribution of the dots in the scatterplot occurs, then homoscedasticity does not exist.

When detecting multicollinearity using SPSS, the descriptive statistic output gives the covariance matrix, which shows the Pearson's correlation coefficient, $r$, between each set of predictor variables. Sets of predictor variables with an $r > .9$ are highly correlated, resulting in an assessment of collinearity between those variables (Dumitrescu et al., 2012). In SPSS, an inspection of variance inflation factor (VIF) values can also indicate multicollinearity. A VIF greater than 10 can indicate an issue with collinearity (Jose & Mampilly, 2014). Multicollinearity testing using the correlations table and VIF is available in SPSS under Analyze > Regression > Linear and selecting Descriptives and Collinearity Diagnostics under the Statistics option. Table 11 shows an example of the table for the VIF output.

Table 11

*SPSS Hypothetical Output for VIF*

| Model | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | *B* | *SE* | β | *t* | *p* | Tolerance | VIF |
| (Constant) | .850 | .059 | | 14.473 | .000 | | |
| X1 | .002 | .001 | .082 | 1.767 | .079 | .991 | 1.009 |
| X2 | .000 | .000 | .041 | 0.901 | .587 | .993 | 1.007 |
| X3 | .001 | .001 | .111 | 0.912 | .369 | .846 | 1.182 |
| X4 | .002 | .003 | .042 | 0.794 | .025 | .981 | 1.019 |
| X5 | .000 | .000 | .025 | 0.544 | .362 | .995 | 1.005 |
| C1 | .002 | .001 | .040 | 0.246 | .427 | .828 | 1.207 |
| C2 | .000 | .002 | .013 | 2.248 | .806 | .720 | 1.390 |

To test for the exogeneity of the independent variables, the testing for the independence of errors can occur through SPSS using the Durbin-Watson statistic. The Durbin-Watson statistic will range from 0 to 4, with a value close to 2 indicating independence of variables (Dumitrescu et al., 2012). The Durbin-Watson statistic is available in SPSS under the Statistics option within the menu item of Analyze > Regression > Linear and shows in the Model Summary table.

**Regression Analysis**

The final step in the data analysis is to conduct the regression analysis. This step allows for examining the relationship between the multiple independent variables and the dependent variable for both of the models. SPSS allows for the running of various types of regression: simultaneous, stepwise, and hierarchical. To determine which variables contributed the most variance to Model 1, I used simultaneous and stepwise regression and then compared the results of each solution to determine which independent variables contributed the most to the variation in the dependent variable.

The equation for Model 1 describing the relationship between the independent variables with the dependent variables is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 C_1 + \beta_7 C_2$$

To determine whether the regression model is a good fit for the data, one can analyze the results from SPSS for the values of $R$, $R^2$, and the adjusted $R^2$. A hypothetical output for the SPSS results of the fit of the data is in Table 12.

Table 12

*SPSS Hypothetical Output for the Multiple Regression Model*

| Model | $R$ | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | Durbin-Watson |
|-------|-----|-------|----------------|----------------------------|---------------|
| 1 | .760 | .577 | .558 | 5.651 | 1.905 |

Use of SPSS can also help determine the statistical significance of the model. An

illustration of the hypothetical output for the SPSS results showing the statistical

significance of the model is in Table 13.

Table 13

*SPSS Hypothetical Output for the Statistical Significance*

| Model | | $SS$ | $df$ | $MS$ | $F$ | $p$ |
|-------|-----------|------|------|------|-------|------|
| 1 | Regression | .155 | 7 | .022 | 1.848 | .076 |
| | Residual | 5.604 | 468 | .012 | | |
| | Total | 5.759 | 475 | | | |

To determine whether a linear relationship exists, one can examine the coefficients to determine the independent variables effect on the dependent variable as well as whether the slope coefficient is statistically significant. An example of the output is shown in Table 14.

Table 14

*SPSS Hypothetical Output for the Coefficients*

| | Model | Unstandardized coefficients | | Standardized Coefficients | | | 95.0% CI for *B* | |
|---|---|---|---|---|---|---|---|---|
| | | *B* | *SE* | β | *t* | *p* | Lower Bound | Upper Bound |
| 1 | (Constant) | .850 | .059 | | 14.473 | .000 | .735 | .966 |
| | X1 | .162 | .001 | .081 | 1.767 | .078 | .000 | .252 |
| | X2 | .120 | .001 | -.041 | -0.901 | .368 | -.002 | .150 |
| | X3 | .001 | .000 | .111 | 2.248 | .025 | .000 | .002 |
| | X4 | .020 | .003 | .042 | 0.913 | .362 | .007 | .030 |
| | X5 | .003 | .000 | .025 | 0.544 | .587 | .001 | .011 |
| | C1 | .060 | .001 | .040 | 0.794 | .452 | -.001 | .100 |
| | C2 | .125 | .002 | .013 | 0.246 | .806 | .001 | .152 |

In SPSS, the General Linear Model (GLM) can also run the regression analysis for Models 1 and 2. When running the regression analysis for Model 2, use of GLM allows SPSS to create the dummy variables for the categorical variables automatically when placing categorical independent variables in the Fixed Factor(s) section. However, continuous independent variables and self-created dummy variables go in the

Covariate(s) section. GLM is available in the SPSS menu of Analyze > General Linear Model > Univariate. After using GLM, determination of whether the regression model is a good fit for the data is through the analysis of the values of $R^2$ and the adjusted $R^2$ as well as the statistical significance of the model as shown in the Test of Between-Subjects Effects and Parameter Estimates output tables from SPSS.

**Study Validity**

Quantitative research must have validity to ensure the accuracy and generalizability of the results. Addressing validity conveys the caliber of quality and precision of the work, allowing for assurance for inferences from the sample to the population. In quantitative research, the three types of validity are design, measurement, and inferential (Ellis & Levy, 2009; Venkatesh et al., 2013; Zachariadis, Scott, & Barrett, 2013).

Measurement validity is whether the data collection instrument is appropriate for measuring what the instrument intends to measure. This research utilized an existing and proven industry instrument from SQM Group as explained in the Instrumentation subsection. Therefore, this fulfilled the requirements of measurement validity.

Design validity consists of external and internal validity (Ellis & Levy, 2009; Venkatesh et al., 2013; Zachariadis et al., 2013). External validity is equivalent to the generalizability of the results and implies that the results and hypotheses inferences can work across other similar situations. Internal validity implies that the results and inferences are accurate based on the research design and data. As this study was

correlational, and therefore nonexperimental, threats to internal and external validity were not applicable.

Establishing inferential validity, otherwise known as statistical validity, shows whether the statistical test in use was appropriate to infer the results or whether the results were by chance (Ellis & Levy, 2009; Pellegrino, DiBello, & Goldman, 2016; Venkatesh et al., 2013). Thus, confirming inferential validity relies on confirming the correlations between the independent and dependent variables are correct. Confirmation of the analysis relies on minimizing Type I and II error, outlier detection, and testing the assumptions of the analysis. Choosing a sufficient sample size when controlling for significance level, power, and effect size minimizes Type I and II error. The total sample in the archival data allowed for the recommended sample of 269, resulting in a low risk to having a Type I or II error.

## Transition and Summary

Section 2 included a detailing of the purpose of this doctoral study, along with the corresponding research questions and hypotheses. Furthermore, Section 2 included an explanation of the quantitative correlational research design with justification for using MLR for analysis of the data. Section 2 also included a discussion on how to determine the reliability and validity of the instruments and the study overall. The next section will show the results of the analysis of the data using MLR and correlations. From that analysis, a discussion of which hypotheses were accepted or rejected will allow for the answer to the research question, along with suggestions for further research and actions.

Section 3: Application to Professional Practice and Implications for Change

**Introduction**

The purpose of this quantitative correlational study was to quantify the

significance of various CSR characteristics including internal service quality, employee

satisfaction, and employee productivity on predicting customer satisfaction for CSRs

serving the banking industry's customers. The research question addressed whether a

linear relationship existed between the CSR's characteristics and the customers'

satisfaction with the CSR. Achievement of this research purpose was through the

application of multiple regression using archival dyadic data. In such a linear regression

model, each observation represented a specific CSR. The independent variables included

the CSR's job satisfaction, productivity, tenure, education, and the internal service

quality metrics of the CSR's satisfaction with their supervisor's skills, the CSR's level of

empowerment, and the training received by the CSR. The dependent variable was the

average customer satisfaction for that CSR. Various subsets of data were analyzed via

regression to help generate actionable insights. One particular model involving poor

performing CSRs whose customer satisfaction was less than 75% top box proved to be

statistically significant, $F(6,33) = 2.601$, $p < .05$, $R^2 = .321$. This suggests that poor

performing CSRs contribute to a significant portion of poor customer service while good

performing CSRs do not necessarily guarantee good customer service. Productivity was

the only statistically significant predictor ($t = 3.204$, $p < .01$) for the model with poor

performing CSRs. A statistically insignificant key variable used in this research was a

CSR's level of education. Such insignificance implies that a less-educated labor pool can

be maintained for CCC support. This relates to positive social change as hiring less-educated applicants could increase their social and economic status.

**Presentation of the Findings**

In this subsection, I will present data preparation steps and the reliability of the constructs, present the descriptive statistics associated with the regression model variables, discuss the testing of the regression assumptions, and present the analysis results. The first step was to analyze the data for anomalies. The data provided by the archival SQM database used for the research included two tenure values: one from the employee self-survey and one based on the employee start date computed from the historical operational data. As some employee start dates were after the completion date of January 2016 for the employee survey, I decided to use the tenure given by the CSR in the employee survey, as it was specific to the number of years of tenure with the contact center. Also, the operational data given by Bank XYZ used in this research from the SQM database included productivity and training hour measures for only December 2015 and January 2016, instead of November 2015 to January 2016. Given the small timeframe gaps, productivity was computed as the average between December 2015 and January 2016 for the CSRs' average number of calls taken per day. Also because of the small timeframe gaps, training hours were computed as the sum of the December 2015 and January 2016 training hours. Other data fixes included using only January 2016 as the productivity measure for one CSR as productivity for that CSR in December 2015 was 0 calls per day.

The data set consisted of 396 records. To determine whether any values were missing or the employee survey contained responses or *Do Not Know*, I ran descriptive statistics in SPSS. Table 15 shows no responses outside of the expected responses for all variables except for X3_Empowerment having some responses of 99 (*Do Not Know*). The total valid *N* from the table was 383 based on missing values from X3_Empowerment, which I confirmed using the Missing Value Analysis and Frequencies reports. By performing a frequency table of X3_Empowerment, SPSS's Frequencies report showed one record with a response of 99 and 13 missing records, as shown in Table 16. With the removal of these records, the data set had a total *n* = 382.

Table 15

*Descriptive Statistics and Missing Values*

| Variable name | *n* | Minimum | Maximum | *M* | *SD* |
|---|---|---|---|---|---|
| X1_Tenure | 396 | 1 | 26 | 3.86 | 5.16 |
| X2_TrainingHours | 396 | 0 | 52.00 | 0.49 | 3.81 |
| X3_Empowerment | 383 | 15 | 99 | 78.35 | 14.92 |
| X4_Education | 396 | 10 | 20 | 14.48 | 2.01 |
| X5_Productivity | 396 | 14.40 | 121.77 | 54.16 | 15.39 |
| X6_SupCommunicate | 396 | 1 | 5 | 4.58 | 0.84 |
| X7_SupCommitments | 396 | 1 | 5 | 4.51 | 0.90 |
| X8_SupRespectful | 396 | 1 | 5 | 4.76 | 0.70 |
| X9_SupResolve | 396 | 1 | 5 | 4.54 | 0.86 |
| X10_SupCareer | 396 | 1 | 5 | 4.27 | 1.09 |
| X11_SupFeedback | 396 | 1 | 5 | 4.53 | 0.92 |
| X12_Esat | 396 | 1 | 4 | 3.39 | 0.71 |
| X13_Recommend | 396 | 1 | 5 | 4.18 | 1.02 |
| X14_Proud | 396 | 1 | 5 | 4.55 | 0.78 |
| X15_NotLookingJob | 396 | 1 | 5 | 3.83 | 1.26 |
| Y_Csat | 396 | 0 | 1.00 | 0.8852 | 0.1273 |

Table 16

*Frequency Table of X3_Empowerment*

| Response | *f* | Percent |
|---|---|---|
| 15 | 1 | 0.3 |
| 25 | 2 | 0.5 |
| 35 | 7 | 1.8 |
| 45 | 11 | 2.8 |
| 55 | 25 | 6.3 |
| 65 | 44 | 11.1 |
| 75 | 70 | 17.7 |
| 85 | 147 | 37.1 |
| 95 | 75 | 18.9 |
| 99 | 1 | 0.3 |
| Total Responses | 383 | 96.7 |
| Missing | 13 | 3.3 |
| Total | 396 | 100.0 |

**Tests of Assumptions – Model 1**

After the removal of records with incomplete data, I computed the composite or

construct variables C1_SupSat and C2_JobSat using a simple additive transformation in

SPSS. The C1_SupSat construct consisted of six questions and had a high level of

internal consistency, as determined by a Cronbach's alpha of .921. The C2_JobSat

construct consisted of four questions and had a good level of internal consistency, as

determined by a Cronbach's alpha of .863. The level of internal consistency is greater the

closer the Cronbach's alpha is to one, with a Cronbach's alpha greater than .90 showing

an excellent level of consistency and a Cronbach's alpha between .80 and .89 showing a

good level of consistency (Matkar, 2012). These construct variables were used in Model

1. Model 1 is the equation below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 C_1 + \beta_7 C_2$$

For each model variable, I assessed outliers and multicollinearity between pairs of

variables. After running the model, I checked for the independence of residuals and

homoscedasticity between the dependent $Y$ variable and the residuals for Model 1.

**Outliers.** Assessment of outliers was through the use of scatterplots and boxplots

of the variables. I determined that two cases were outliers through a scatterplot of

X5_Productivity (average number of calls per day) to average handle time (AHT) in

seconds, which was in the data set also. One case had extremely high productivity using

the average number of calls per day, and the other case had extremely high productivity

using AHT. The scatterplot is in Appendix E. Boxplots for X1_Tenure,

X2_TrainingHours, X3_Empowerment, X4_Education, X5_Productivity, C1_SupSat,

and C2_JobSat are in Appendix E. I omitted cases where multiple variables showed the

case as an outlier. Thus, I removed five cases from the data set as outliers. X4_Education

was the only variable without outliers. With the removal of the seven cases due to

outliers, $n = 375$ cases. From this data set, I selected 269 cases for analysis with SPSS's

Select Cases feature using the *Random sample of cases* option. At this point, I ran the

regression analysis for Model 1 using the seven independent variables.

**Outliers, leverage points, and influential points.** The assumption of normality

for MLR requires the residual errors to have a normal distribution. While it helps if each

of the independent variables has a normal distribution, it is not necessary. One of the

variables, X2_TrainingHours, had a significant amount of records with a value of zero.

The histogram of X2_TrainingHours is in Appendix E. Due to the significant number of

CSRs with zero training hours (255 cases out of the 269 total cases), I tried to adjust the

variable by considering 10 hours of training for every year of tenure. However, this made

X2_TrainingHours too highly correlated with X1_Tenure, which would violate the

assumption of no multicollinearity. Upon performing a partial regression plot to see the

linear relationship between Y_Csat and X2_TrainingHours, little linear relationship

showed between the two variables (shown in Appendix E). The correlation between

customer satisfaction and training hours was -.015. I decided to omit X2_TrainingHours

from the regression equation because of these reasons. Upon the removal of

X2_TrainingHours, I used the remaining variables to test the hypotheses of Model 1 to

predict the dependent variable of customer satisfaction.

Upon running the regression analysis, the Casewise Diagnostics table produced by SPSS highlighted outliers where the standardized residual was greater than ±3 standard deviations. The table showed three cases, which were removed as outliers. A check of the studentized deleted residuals showed one record greater than ±3 standard deviations, which was omitted as a potential outlier. The removal of these cases left 265 records for the regression analysis. I checked leverage points by assessing whether any values were greater than 0.2. The highest leverage value was 0.11883, resulting in no leverage points. Cook's Distance was used to assess whether there were any influential points, with a required investigation into any case with a Cook's Distance value being above 1. The highest Cook's Distance was 0.10079, resulting in no influential points.

**Multicollinearity.** The test of no multicollinearity was through the Pearson's correlation coefficient between each pair of predictor variables. No pair of predictor variables had a correlation greater than .7, and as such, multicollinearity did not exist in the model (see Table 17). In addition, the VIF for all six predictor variables was less than 10 as shown in Table 18, also indicating no collinearity (Hopkins & Ferguson, 2014; Jose & Mampilly, 2014).

Table 17

*Correlations of the Independent Variables for Model 1*

| Variable name | X1 | X3 | X4 | X5 | C1 | C2 |
|---|---|---|---|---|---|---|
| X1_Tenure | 1.000 | .068 | -.022 | .074 | .060 | .003 |
| X3_Empowerment | .068 | 1.000 | .022 | -.166 | .146 | .243 |
| X4_Education | -.022 | .022 | 1.000 | .134 | .001 | -.120 |
| X5_Productivity | .074 | -.166 | .134 | 1.000 | .067 | -.086 |
| C1_SupSat | .060 | .146 | .001 | .067 | 1.000 | .362 |
| C2_JobSat | .003 | .243 | -.120 | -.086 | .362 | 1.000 |

Table 18

*Output of VIF for Model 1*

| | Collinearity Statistics | |
| Model | Tolerance | VIF |
|---|---|---|
| X1_Tenure | .984 | 1.016 |
| X3_Empowerment | .903 | 1.107 |
| X4_Education | .963 | 1.039 |
| X5_Productivity | .934 | 1.071 |
| C1_SupSat | .850 | 1.176 |
| C2_JobSat | .812 | 1.232 |

**Exogeneity of independent variables.** The test for independence of observations was through the Durbin-Watson test. The Durbin-Watson statistic was 1.796, which was close to 2 and therefore indicating independence of residuals (Dumitrescu et al., 2012). Thus, the model met the assumption of exogeneity of independent variables.

**Regression Analysis – Model 1**

A simultaneous regression, $\alpha = .05$ (two-tailed), was conducted to evaluate how well the six employee characteristics predicted the dependent variable of customer satisfaction with the CSR and to determine whether the model met the assumptions of normality, linearity, and homoscedasticity. The predictors for the six variable Model 1 were tenure, empowerment, education, productivity, employee satisfaction with their supervisor, and employee satisfaction with their job. The null hypothesis for Model 1 was that these six independent variables would not significantly predict customer satisfaction. The alternative hypothesis for Model 1 was that these six independent variables would significantly predict customer satisfaction.

**Normality.** The test of normality was through a visual inspection of the Normal P-P plot and a histogram of regression standardized residual. Figure 9 shows the Normal P-P plot of regression standardized residual. The points approximately align along the diagonal line with a slight curved-shaped pattern for the P-P plot. However, this satisfied the condition of normality based on visual inspection.
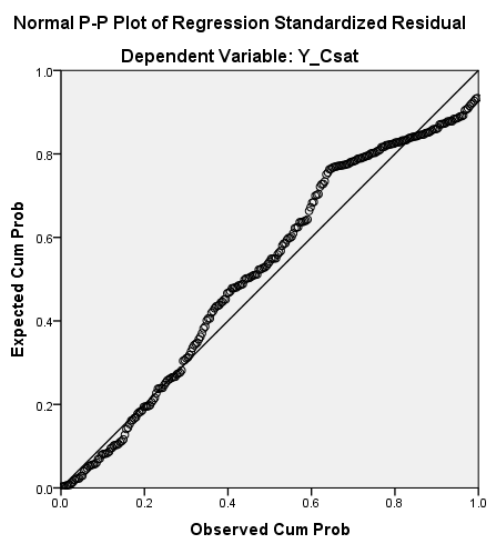
*Figure 9*. Normal P-P plot of regression standardized residual for six variable regression

Model 1.

Figure 10 shows the histogram of regression standardized residual. The histogram

showed a slight positive skewness existed in the distribution. However, the results of the

histogram satisfy the condition of normality based on visual inspection.
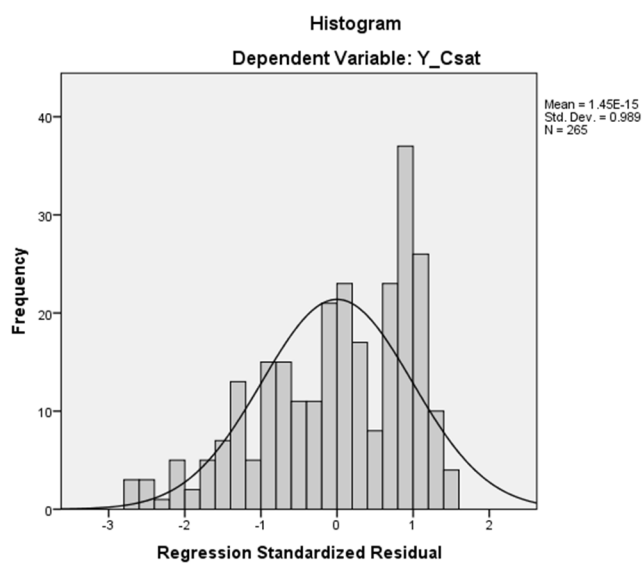


*Figure 10*. Residual histogram for six variable regression Model 1.

**Linear relationship and homoscedasticity.** The test of a linear relationship between the dependent variables and independent variables collectively was through a scatterplot of the studentized residuals against the unstandardized predicted values. Figure 11 shows the scatterplot for the model with six variables.
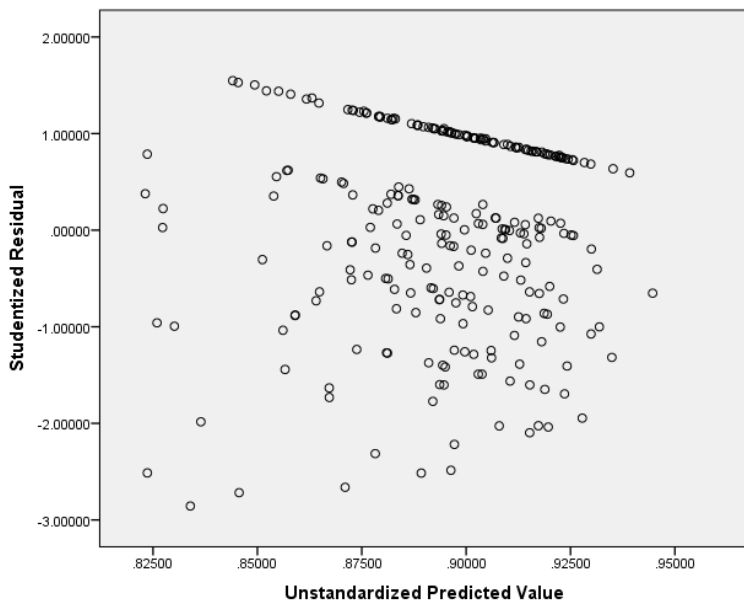


*Figure 11*. Scatterplot of studentized residuals against unstandardized predicted value for six variable Model 1.

The residuals formed a slight horizontal band, warranting an investigation of each independent variable against the dependent variable. Some heteroscedasticity may exist as shown by the slight funnel in the distribution of the dots in the scatterplot. A slight heteroscedasticity has a small effect when using MLR but it can contribute to increased Type I error (Osborne & Waters, 2002). The scatterplots for each independent variable against the dependent variable are shown in Appendix E to assess linearity. While a non-

linear model may be more suited to the data, I continued with a linear model to correspond with the theoretical framework of the service-profit chain model.

**Results.** The linear combination of the six employee characteristics was significantly related to customer satisfaction with the CSR, $F(6,258) = 2.321$, $p = .034$. The multiple regression model using six variables resulted in a multiple correlation coefficient of .226, indicating that the six employee characteristics accounted for approximately 5.1% of the variance in customer satisfaction with the CSR. However, only the predictor variable C1_SupSat was significant ($t = 2.235$, $p < .05$). Table 19 shows the results.

Table 19

*Statistical Analysis Results of the Six Variable Simultaneous Regression Model 1*

| | | | | | | 95% CI for *B* | |
| | | | | | | Lower Bound | Upper Bound |
| Variable | *B* | *SE* | β | *t* | *p* | | |
|---|---|---|---|---|---|---|---|
| (Constant) | .729 | .075 | | 9.684 | .000 | .580 | .877 |
| X1_Tenure | .001 | .001 | .044 | 0.725 | .469 | -.002 | .003 |
| X3_Empowerment | .000 | .000 | .042 | 0.664 | .508 | -.001 | .001 |
| X4_Education | .003 | .003 | .060 | 0.973 | .331 | -.003 | .010 |
| X5_Productivity | -.001 | .000 | -.106 | -1.686 | .093 | -.002 | .000 |
| C1_SupSat | .004 | .002 | .147 | 2.235 | *.026 | .000 | .007 |
| C2_JobSat | .002 | .002 | .059 | 0.873 | .384 | -.002 | .006 |

*Note.* $R^2 = .051$, Adjusted $R^2 = .029$, $F(6,258) = 2.321$, $p = .034$; *$p < .05$.

The use of stepwise regression confirmed the best-fit regression model included only the employee satisfaction with their supervisor as the variable that explained the distribution best. However, the model with only employee satisfaction with their supervisor had $F(1,263) = 7.842$, $p = .005$, $R^2 = .029$, adjusted $R^2 = .025$. This model explained less of the variance in customer satisfaction than did the model with six variables. As such, I rejected the null hypothesis for Model 1 that the six variables of tenure, empowerment, education, productivity, employee satisfaction with their supervisor, and employee satisfaction with their job did not significantly predict customer satisfaction. However, the six variables explained only 5.1% of the variance in customer satisfaction, making it a very poor model.

**Tests of Assumptions – Model 2**

Model 2 looked at the linear combination of tenure, training hours, empowerment, education, productivity, supervisor skills: communication, supervisor skills: commitments, supervisor skills: respectful, supervisor skills: resolves concerns, supervisor skills: career development, supervisor skills: provides feedback, job satisfaction, recommending, proud to work, and commitment to determine whether these variables significantly predicted customer satisfaction. Based on the results of Model 1, I removed training hours from the model. The proposed regression equation was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11}$$
$$+ \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15}$$

**Outliers.** The boxplots for X6_SupCommunicate, X7_SupCommitments, X8_SupRespectful, X9_SupResolve, X10_SupCareer, X11_SupFeedback, X12_Esat, X13_Recommend, X14_Proud, and X15_NotLookingJob are in Appendix E. I removed cases where multiple variables showed the case as an outlier, and as such I removed 17 cases from the data as outliers. X4_Education and X15_NotLookingJob were the only variables without outliers. With the removal of 17 cases due to outliers, $n = 363$ records. From this data set, I selected 269 cases for analysis with SPSS's Select Cases feature using the *Random sample of cases* option. At this point, I ran the regression analysis for Model 2 with the 14 independent variables using GLM in SPSS.

**Regression Analysis – Model 2**

GLM was conducted to evaluate how well the 14 employee characteristics predicted the dependent variable of customer satisfaction with the CSR. The 14 predictors for Model 2 were tenure, empowerment, education, productivity, supervisor skills: communication, supervisor skills: commitments, supervisor skills: respectful, supervisor skills: resolves concerns, supervisor skills: career development, supervisor skills: provides feedback, job satisfaction, recommending, proud to work, and commitment. The null hypothesis for Model 2 was that these independent variables would not significantly predict customer satisfaction. The alternative hypothesis for Model 2 was that these independent variables would significantly predict customer satisfaction. The multiple regression model using all 14 variables resulted in $F(42, 226) = 1.332, p = .97$, with $R^2 = .198$, adjusted $R^2 = .049$ (see Table 20). Approximately 19.8% of the variance in customer satisfaction with the CSR was accounted for by the 14

employee characteristics however the model was not significant. As such, I accepted the

null hypothesis for Model 2 that the 14 variables of employee characteristics did not

significantly predict customer satisfaction.

Table 20

*Statistical Analysis Results of the 14 Variable GLM Regression Model 2*

| Source | Type II Sum of Squares | df | MS | F | p |
|---|---|---|---|---|---|
| Corrected Model | .907 | 42 | .022 | 1.332 | .97 |
| Intercept | 1.117 | 1 | 1.117 | 68.842 | .000 |
| X1_Tenure | .006 | 1 | .006 | 0.399 | .528 |
| X3_Empowerment | .034 | 1 | .034 | 2.072 | .151 |
| X4_Education | .007 | 1 | .007 | 0.403 | .526 |
| X5_Productivity | .085 | 1 | .085 | 5.223 | .023 |
| X6_SupCommunicate | .086 | 4 | .022 | 1.329 | .260 |
| X7_SupCommitments | .072 | 4 | .018 | 1.114 | .351 |
| X8_SupRespectful | .068 | 4 | .017 | 1.052 | .381 |
| X9_SupResolve | .011 | 4 | .003 | 0.172 | .952 |
| X10_SupCareer | .189 | 4 | .047 | 2.911 | .022 |
| X11_SupFeedback | .032 | 4 | .008 | 0.495 | .740 |
| X12_Esat | .057 | 3 | .019 | 1.170 | .322 |
| X13_Recommend | .041 | 4 | .010 | 0.635 | .638 |
| X14_Proud | .038 | 3 | .013 | 0.777 | .508 |
| X15_NotLookingJob | .039 | 4 | .010 | 0.594 | .667 |
| Error | 3.666 | 226 | .016 | | |
| Total | 211.990 | 268 | | | |
| Corrected Total | 4.573 | 268 | | | |

*Note.* $R^2 = .198$, Adjusted $R^2 = .049$.

**Further Analysis – Model 3**

Upon reflection of the results of Model 1 and 2, the conclusion was that employee characteristics are not necessarily a predictor of customer satisfaction for all CSRs. Employee happiness and high productivity is not a guarantee of great service. However, it may be that poor employees cause poor service. Thus, I conducted further analysis on two subsets of the original data, one of poor performing employees and one of high performing employees.

A third model, Model 3, was the poor performing CSR subset of the data where the CSR had achieved an average customer satisfaction of less than 75% top box rating. The null hypothesis was that the six independent variables of tenure, empowerment, education, productivity, employee satisfaction with their supervisor, and employee satisfaction with their job would not significantly predict customer satisfaction for poor performing CSRs. The alternative hypothesis was that these six independent variables would significantly predict customer satisfaction for poor performing CSRs. The new regression model was as follows for Model 3:

$$Y_{\text{(Poor Performers)}} = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 C_1 + \beta_7 C_2$$

By looking at only the poor performers, the data set now had 41 cases. Boxplots of variables showed X1_Tenure and C1_SupSat having outliers (shown in Appendix E). However, only one case was consistent across both boxplots as an outlier. I removed this case as an outlier.

A simultaneous regression, $\alpha = .05$ (two-tailed), was conducted to evaluate how well the six employee characteristics predicted the dependent variable of customer

satisfaction with the CSR for poor performing CSRs and to determine whether the model met the assumptions of normality, linearity, and homoscedasticity.

Linearity existed as assessed by partial regression plots and a plot of the studentized residuals against the predicted values (see Figure 12). Some heteroscedasticity may exist as shown by the slight funnel in the distribution of the dots in the scatterplot. However, a slight heteroscedasticity has a small effect when using MLR (Osborne & Waters, 2002). In addition, I followed through with the linear model to keep in line with the theoretical framework of the service-profit chain model.
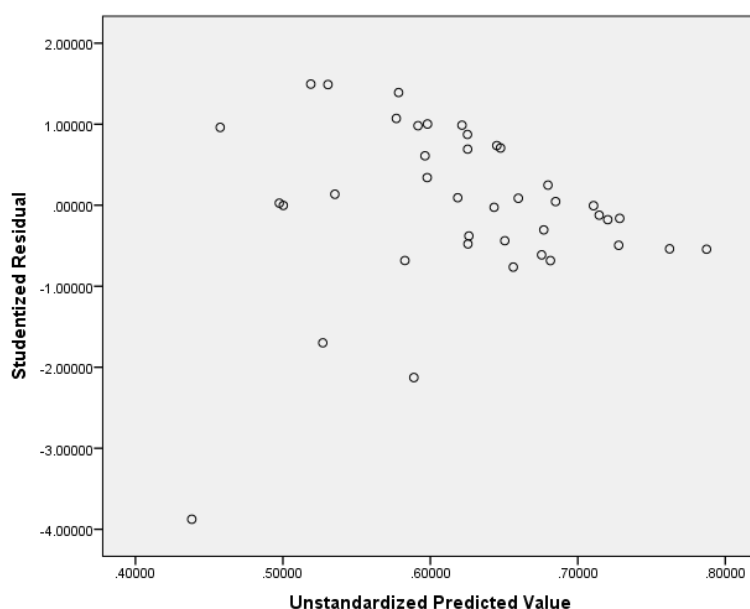


*Figure 12*. Scatterplot of studentized residuals against unstandardized predicted value for Model 3.

The Durbin-Watson statistic was 1.799, indicating independence of residuals as the value is close to 2. All VIF values were less than 10, indicating no evidence of multicollinearity, as shown in Appendix E. Also, all correlations between the independent

variables were less than .7 indicating no evidence of multicollinearity, also shown in

Appendix E. However, the correlation between C1_SupSat and C2_SupSat was high at

.683, but was still less than .7.

The test of normality was through a Normal P-P plot and a histogram of

regression standardized residual. Figure 13 shows the Normal P-P plot for Model 3. The

residuals did not follow a complete linear distribution, as the residuals do not fall entirely

on the line. However, I followed through with the linear model to keep in line with the

theoretical framework of the service-profit chain model.
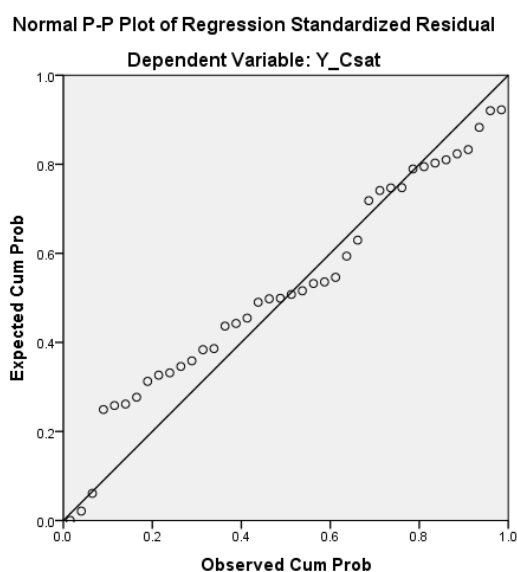


*Figure 13*. Normal P-P plot of regression standardized residual for six variable regression

Model 3.

The histogram for Model 3, shown in Figure 14, has a relatively normal distribution with a slight skew to the left. Based on visual inspection the histogram satisfies the condition of normality.
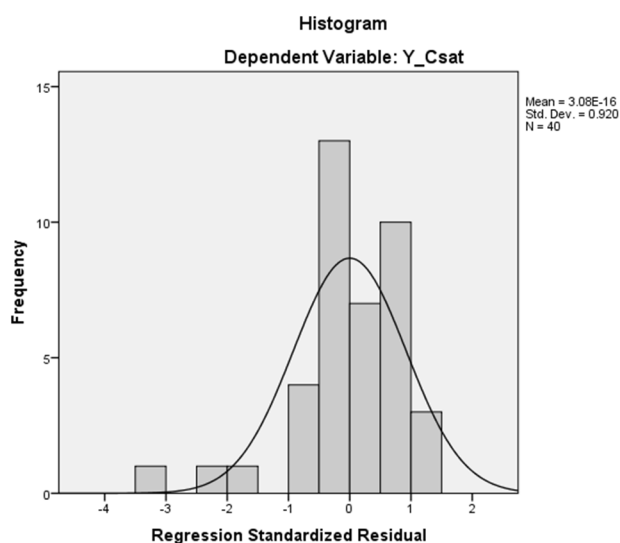


*Figure 14*. Residual histogram for six variable regression Model 3.

The linear combination of the six employee characteristics was significantly related to customer satisfaction for poor performing CSRs, $F(6,33) = 2.601$, $p = .036$. The multiple regression model using all six variables resulted in a multiple correlation coefficient of .567, indicating that the six employee characteristics accounted for approximately 32.1% of the variance in customer satisfaction with poor performing CSRs. However, the adjusted $R^2$ was only 19.8%. Table 21 shows the results. With $N = 40$ and $\alpha = .05$, the effect size calculated using G*Power was .42, which is a large effect size (Faul et al., 2009).

Table 21

*Statistical Analysis Results of the Six Variable Simultaneous Regression Model 3*

| | | | | | | 95% CI for $B$ | |
| | | | | | | Lower Bound | Upper Bound |
| Variable | $B$ | $SE$ | β | $t$ | $p$ | Lower Bound | Upper Bound |
| (Constant) | .411 | .209 | | 1.967 | .058 | -.014 | .837 |
| X1_Tenure | .002 | .005 | .054 | 0.360 | .721 | -.008 | .012 |
| X3_Empowerment | .001 | .001 | .162 | 0.959 | .344 | -.001 | .004 |
| X4_Education | -.006 | .010 | -.091 | -0.615 | .543 | -.027 | .014 |
| X5_Productivity | .004 | .001 | .480 | 3.204 | *.003 | .002 | .007 |
| C1_SupSat | -.006 | .005 | -.221 | -1.096 | .281 | -.016 | .005 |
| C2_JobSat | .009 | .008 | .254 | 1.186 | .244 | -.007 | .025 |

*Note.* $N = 40$, $R^2 = .321$, Adjusted $R^2 = .198$, $F(6,33) = 2.601$, $p = .036$; $*p < .01$

This analysis supports rejecting the null hypothesis that the linear combination of tenure, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction does not significantly predict customer satisfaction for poor performing CSRs. Only productivity was significant in the model ($t = 3.204$, $p < .01$).

Use of stepwise regression included only productivity as significant to customer satisfaction with $F(1,38) = 10.983$, $p = .002$, $R^2 = .224$, adjusted $R^2 = .204$. This means productivity accounted for 22% of the variance in customer satisfaction for poor performing CSRs. While $R^2$ was lower in the productivity only model compared to the model using six variables, the adjusted $R^2$ was higher.

**Further Analysis – Model 4**

The fourth model, Model 4, was the high performing employee subset of the data set where the CSR had achieved an average customer satisfaction of 75% or more. The

null hypothesis was that the six independent variables of tenure, empowerment, education, productivity, employee satisfaction with their supervisor, and employee satisfaction with their job would not significantly predict customer satisfaction for high performing CSRs. The alternative hypothesis was that these six independent variables would significantly predict customer satisfaction for high performing CSRs. The new regression model was as follow for Model 3:

$$Y_{(\text{High Performers})} = \beta_0 + \beta_1 X_1 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 C_1 + \beta_7 C_2$$

By looking at only the high performers, the data set now had 339 cases. Boxplots of variables showed X1_Tenure, X3_Empowerment, X5_Productivity, C1_SupSat, and C2_JobSat having outliers. Seven cases were consistent across multiple boxplots as outliers. I omitted these seven cases from the data set as outliers. I then ran the regression analysis over the remaining 332 cases.

The linear combination of the six employee characteristics was not significantly related to customer satisfaction for high performing CSRs, $F(6,325) = 0.658$, $p = .684$. The multiple regression model using all six variables resulted in a multiple correlation coefficient of 0.110, indicating that the six employee characteristics accounted for approximately 1.2% of the variance in customer satisfaction with high performing CSRs. Table 22 shows the results.

Table 22

*Statistical Analysis Results of the Six Variable Simultaneous Regression Model 4*

| Variable | $B$ | $SE$ | $\beta$ | $t$ | $p$ | 95% CI for $B$ Lower Bound | Upper Bound |
|---|---|---|---|---|---|---|---|
| (Constant) | .934 | .056 | | 16.571 | .000 | .823 | 1.045 |
| X1_Tenure | .001 | .001 | .055 | 0.984 | .326 | -.001 | .003 |
| X3_Empowerment | .000 | .000 | -.022 | -0.394 | .694 | -.001 | .001 |
| X4_Education | .002 | .002 | .037 | 0.654 | .514 | -.003 | .006 |
| X5_Productivity | -.001 | .000 | -.096 | -1.684 | .093 | -.001 | .000 |
| C1_SupSat | .000 | .001 | .018 | 0.300 | .764 | -.002 | .003 |
| C2_JobSat | -.001 | .002 | -.029 | -0.478 | .633 | -.004 | .003 |

*Note.* $N = 332$, $R^2 = .012$, Adjusted $R^2 = -.006$, $F(6,325) = .658$, $p > .05$.

Use of forward and backward regressions showed no variables significant to customer satisfaction. This analysis supports accepting the null hypothesis that the linear combination of tenure, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction does not significantly predict customer satisfaction for high performing CSRs.

**Analysis Summary**

The purpose of this study was to examine the employee characteristics of tenure, training hours, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction to see the effect on customer satisfaction. I used a number of MLR models with various data cuts (rows of data) and variables (columns of data) to determine the most significant factors in predicting customer satisfaction. While the overall fit of the model was poor when assessing whether these factors would affect

customer satisfaction with a CSR for all CSRs, the fit of the model improved when only

assessing poor performing CSRs who had a top box rating of less than 75% for customer

satisfaction.

I decided to remove training hours, as it was a poor fit in the model with its

nonlinearity to customer satisfaction. This removal was due to few CSRs receiving

training within the two-month span available in the data set. The employee characteristics

of tenure, empowerment, education, productivity, satisfaction with supervisor's skills,

and employee job satisfaction significantly predicted customer satisfaction for poor

performing CSRs, $F(6,33) = 2.601$, $p = .036$, $R^2 = .321$, adjusted $R^2 = .198$. However,

only productivity was significant $p < .05$.

I expected a high fit for the model with the variables in the given data set;

however, the independent variables were not good predictors of customer satisfaction.

While other variables may have been suitable to add to the significance of the predictive

model, the archival data was readily available as-is, and I was unable to go back to collect

more data to refit a new model. Another issue is that the CSRs exhibit high attrition rates

making it difficult to generate a much better sample of rows and columns. Nonetheless,

despite the mediocre fit of Model 3 with it accounting for only 32.1% of the variance, this

research is still powerful as it indicates that additional variables are needed to improve

the model as explained in the subsection Recommendations for Future Research.

**Applications to Professional Practice**

I examined the effects of employee characteristics on customer satisfaction. I

performed MLR and GLM to analyze a sample of 269 cases of CSRs who had customer

satisfaction surveys completed within two months of assessment of the employee

satisfaction and operational metrics. The results of the study were to reject the null

hypothesis for Model 1 and accept the null hypothesis for Model 2 that the employee

characteristic variables did not significantly predict customer satisfaction. The variance in

Model 1 was very low as the model only explained 5.1% of the variance in customer

satisfaction. The conclusion was that the employee characteristics in the model are not a

predictor of customer satisfaction. This conclusion is important when managers in the

banking industry look at the characteristics of potential employees when hiring. High

education was not a predictor of customer satisfaction. Thus, contact center managers can

focus on other skills when hiring. Tenure was also not a predictor of customer

satisfaction. Therefore, managers may see CSRs with tenure who have recently started to

be producing similar results to longer tenured CSRs for customer satisfaction.

When looking only at poor performing CSRs whose customer satisfaction was

lower than 75%, the results of the study were statistically significant to reject the null

hypothesis with the six predictor variables. Model 3 with poor performing CSRs

produced better results than Model 1 in that the model accounted for 32.1% of the

variance in customer satisfaction in comparison to Model 1 accounting for 5.1%.

However, only productivity was significant for Model 3. Nonetheless, the findings of this

study have applicability to the professional practice of business by giving contact center

managers factors to focus on when assessing who is a poor performing CSR. Productivity

is an easy variable to measure in the contact center industry and is readily available for

each CSR. CSRs with low productivity should be assessed to determine whether their low productivity is causing unhappy customers through unresolved issues.

## Implications for Social Change

The hope in this study was to identify employee traits that contributed to customer satisfaction such that managers could hire CSRs predisposed to these traits. However, the poor fit of the model with the available employee characteristics in the given data set did not allow for this. Nonetheless, these results suggest that education is not a predictor of whether a CSR in the banking industry will be a high or low performer in customer satisfaction. The banking industry has medium to high complexity transactions. Hiring practices in the banking industry typically tends to focus on hiring people with a higher education. The results of this study suggest a focus on education is not necessary. Such insignificance implies that for CCC support, a less-educated labor pool can be maintained, balancing societal benefits of employment for less-educated people at a reasonable service cost to a company. This relates to positive social change as hiring less-educated applicants could increase their social and economic status.

## Recommendations for Action

Based on the results of my research, I recommend the following actions for managers of contact centers in the banking industry. Since education was not a significant predictor of customer satisfaction, CCC management should not focus on education when hiring and broaden the scope of the labor pool. Since productivity was a predictor of customer satisfaction for poor performing CSRS, managers should continue to measure productivity but cross-reference productivity with customer satisfaction. Many contact

centers are doing away with productivity measurement to ensure contact resolution for their customers. However, long call handle times can frustrate customers and increases dissatisfaction if the resolution of their issue is not achieved. Thus, CSRs with low productivity and low customer satisfaction need coaching and performance reviews. Those CSRs with low productivity but high customer satisfaction can be left alone regarding productivity requirements as they are meeting the needs of customers.

Unfortunately, the results of this study produced models that explained little of the variance in customer satisfaction for CSRs in the banking industry. However, the findings on education not being a predictor of customer satisfaction in the banking industry could prove valuable when publishing in journals as other literature has shown education to be a predictor for some industries. Thus, publishing these results can add to the literature showing these factors are not a predictor of customer satisfaction and therefore do not need to be taken into consideration when hiring and training CSRs in the banking industry.

## Recommendations for Further Research

I identified several opportunities for additional research during the course of this research. The first recommendation for further research is to have the period for training be longer. The period given in the data set was two months but the large number of cases where the CSR had no training hours implies that a greater period is needed, possibly a year. Another option would be to coincide the analysis with a period after a group of CSRs attends a training course in customer service allowing for a larger group to test the

effect of training hours on customer satisfaction against those who did not accumulate training hours.

The second recommendation for further research is to add more variables to the model. The current model of the six variables of tenure, empowerment, education, productivity, satisfaction with supervisor's skills, and employee job satisfaction significantly accounted for only 32.1% of the variance in customer satisfaction for poor performing CSRs. However, the use of archival data limited the variables available for the model. Heskett et al.'s (1994) service-profit chain model suggested additional variables of workplace design, job design, employee development, employee rewards and recognition, and tools such as desktop applications as an effect on employee satisfaction. The inclusion of these additional variables could result in a better fit for the model. It would be relatively simple to add questions regarding the employee's satisfaction with these variables to the employee survey since the survey already captures the measures of job satisfaction and supervisor satisfaction. Also, an addition to the model could be the amount of salary, bonus, or recognition dollars achieved by the CSR in a year, possibly supplied within the operational data by Bank XYZ.

The third recommendation would be to collect additional samples. The total sample for Model 3 was quite low with only 40 cases. Additional samples could result in a better predictive model. As the model was fit for poor performing CSRs, industries with known customer satisfaction issues, such as the telecommunication industry or government sector, may have a larger volume of poor performing CSRs available to compile a bigger sample. This search for poor performing CSRs leads to a fourth

recommendation, which would be to analyze these variables in industries other than the banking industry. It may be that the complexity of the banking industry warrants the addition of more variables to the predictive model. However, the predictive model may have a better fit in a less complex industry or in an industry known for providing poor service.

A fifth recommendation would be to investigate alternative methods to derive the composites of job satisfaction and supervisor satisfaction other than a simple summation. It may be that these variables had more of an effect on customer satisfaction, but the simple summation did not allow the effect to show. Statistical methods, such as exploratory factor analysis, could better account for the effect by weighting each question to produce an overall weighted formula.

A sixth recommendation would be to use different scales to measure the variables of empowerment, job satisfaction, or supervisor satisfaction. It may be that these variables have an effect but the measurement scale did not account for it. For instance, the measurement of empowerment was a question in the employee survey on what percentage of calls the CSRs felt they had full control to resolve. The measurement of this variable could be a different question. Somewhat similarly, a reliability analysis could be conducted on the questions in the survey to determine which variables to use. For example, test-retest reliability and split-half method can be used to determine the consistency of the measures. Test-retest reliability assesses the stability of the test over time by giving the same test to participants at two separate times. Similar results across tests imply external reliability exists. Split-half method assesses internal reliability

through the comparison of one-half of the test results to the other half of the test results. Any item that has low correlation between itself on the two halves of the test should either be removed or rewritten.

**Reflections**

Having worked as a researcher and consultant in customer satisfaction for the contact center industry, I had preconceived notions about some of the variables used in this study. One preconceived notion was on the measure of productivity. Productivity is a measure much debated in the contact center industry. While it is measured to reduce issue resolution time and thus labor costs in contact centers, it can also be to a detriment to CSR satisfaction if CSRs feel that they cannot resolve customers' issues due to productivity requirements. I had thought productivity would not have as much of an impact on the model as many organizations have done away with productivity requirements and have seen no impact on customer satisfaction. However, it does make sense that low productivity would have an impact if customers' issues were not resolved thus causing customer dissatisfaction. After completion of this study, I concluded that productivity is a worthy metric to measure against reasonable targets for the purpose of highlighting CSRs with poor productivity combined with low customer satisfaction.

**Summary and Study Conclusions**

The purpose of this study was to examine the relationship between certain employee characteristics and customer satisfaction. The research question was whether these employee characteristics for CSRs had an impact on the customer's satisfaction with the CSR. Use of a quantitative correlational study design allowed assessment of the

research question through MLR. The independent variables were tenure, training hours, empowerment, education, productivity, employee job satisfaction, and employee satisfaction with their supervisor. The dependent variable was customer satisfaction with the CSR.

From the results of the study, the conclusion was that six of the variables predicted customer satisfaction, with training hours removed. However, the variance was low for the overall model. These six variables predicted customer satisfaction with a higher variance when only looking at poor performing CSRs. But, the employee characteristics did not significantly predict customer satisfaction for high performing CSRs. The results of this study are important for managers in the contact center industry as this research shows that productivity should be a metric measured in the contact center. Those CSRs who have low productivity should be assessed to determine whether their low productivity is due to not resolving the customer's call and causing dissatisfied customers. The results also indicate that education is not a predictor of customer satisfaction, allowing for managers to consider hiring those who have high school or less education. Finally, I recommended opportunities for further research.

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Appendix A: Data Use Agreement

## DATA USE AGREEMENT

This Data Use Agreement ("Agreement"), effective as of March 1, 2015 ("Effective Date"), is entered into by and between Lara Pow ("Data Recipient") and Service Quality Measurement Group, 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.

1. 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.

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

3. 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 (list all data to be provided): Employee Survey Data: Employee Satisfaction Survey Results, Date of Hire, Training Hours, Average Handle Time, Average Number of Calls Per Day. Customer Data: Average Customer Satisfaction with Customer Service Representative.

4. Responsibilities of Data Recipient. Data Recipient agrees to:

    a.  Use or disclose the LDS only as permitted by this Agreement or as required by law;

    b.  Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

    c.  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;

    d.  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

    e.  Not use the information in the LDS to identify or contact the individuals who are data subjects.

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

6. <u>Term and Termination.</u>

    a.    <u>Term.</u> 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.

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

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

    d.    <u>For Breach.</u> 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.

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

7. <u>Miscellaneous.</u>

    a.    <u>Change in Law.</u> 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.

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

    c.    <u>No Third Party Beneficiaries.</u> 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.

    d.    <u>Counterparts.</u> 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.

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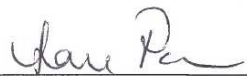
IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

**DATA PROVIDER**

Signed: _____

Print Name: _Mike Desmarais_

Print Title: _CEO, SQM Group_

**DATA RECIPIENT**

Signed: _____

Print Name: _Lara Pow_

Print Title: _President, SQM Group_

# SQM CONFIDENTIALITY POLICY

The Employee acknowledges and agrees that as an Employee employed by SQM, the Employee will have access to confidential information, such as, survey ratings, customer feedback, techniques, scripts, analysis, reports, program coding and any additional confidential information not listed.

The Employee acknowledges that the confidential information could be used to the detriment of SQM. Accordingly, the Employee undertakes and agrees to treat confidentially all such confidential information and not to disclose to any third party either during the Employee's employment or following the termination of the Employee's employment with SQM.

The Employee acknowledges and agrees that the unauthorized disclosure of any confidential information during the employment with SQM will constitute just cause for the immediate dismissal of the Employee by SQM. If the Employee is no longer employed by SQM and breaks SQM's confidentiality policy the Employee will be held legally accountable for the Employee's breakage of SQM's confidentiality policy.

**Third Party Confidentiality**
The Employee acknowledges that the Employee will be placed in a position of confidence and trust with clients of SQM while performing Employee services and during the course of employment may receive confidential and other information of SQM clients. The Employee agrees to hold such information in the strictest confidence and not disclose it to any party other than SQM during the employment as well as when the Employee is no longer employed by SQM.

The Employee acknowledges and agrees that the unauthorized disclosure of any confidential information of the clients of SQM during the employment of the Employee with SQM will constitute just cause for the immediate dismissal of the Employee by SQM. If the Employee is no longer employed by SQM and breaks SQM's confidentiality policy the Employee will be held legally accountable for the Employee's breakage of SQM's confidentiality policy.
I have read an agreed to the above Confidentiality Policy


**Employee Name:**      _____

**Employee Signature:**      _____

**Date:**      _____

Appendix C: Permission for Figures

Permissions <IS5820_12897@is.instantservice.com>     9:56 AM (4 hours ago)
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Hello Lara,

Thank you for your message and interest in our publications. Yes, it is fully permissible to reference and include any exhibits or tables from HBR articles in a Master theses or PhD dissertations, at no charge, provided that appropriate citation and reference to the article is given. Just for future reference, something like this does not require formal permission -- it's a "fair use" situation.

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Sent: Aug 30, 2015 3:16:40 PM
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Hello,

I would like to adapt a figure for use in my DBA dissertation. I will not be using a photocopy of the figure, but will be adapting the figure to fit the proposed model in my dissertation. The figure I would like to adapt is the service-profit chain model from "Putting the service-profit chain to work, by J. L. Heskett, T. O. Jones, G. W. Loveman, W. E. Sasser, Jr, and L. A. Schlesinger, 1994, Harvard Business Review, 72(2), p. 167.

My dissertation will be published in the ProQuest database. Can you please give me permission to use this figure?

Thank you for your guidance.

Lara Pow

Appendix D: Survey Questions

The dependent variable comes from a question in a customer satisfaction survey, as shown in Table D1, and some of the independent variables come from questions in an employee satisfaction survey, as shown in Table D2 and Table D3.

Table D1

*Customer Satisfaction with CSR Question*

| Question | Possible response | | | |
|---|---|---|---|---|
| How satisfied were you with the customer representative who handled your call? | Very satisfied | Somewhat satisfied | Somewhat dissatisfied | Very dissatisfied |

Table D2

*Employee Demographic Questions*

| Question | Possible response |
|---|---|
| Length of service with contact centre | 0 to 11 months (less than 1 year) |
| | 1 year |
| | 2 years |
| | 3 years |
| | 4 years |
| | 5 years |
| | 6 years |
| | 7 years |
| | 8 years |
| | 9 years |
| | 10 years |
| | 11 years |
| | 12 years |
| | 13 years |
| | 14 years |
| | 15 years |
| | 16 years |
| | 17 years |
| | 18 years |
| | 19 years |
| | 20 years |
| | 21 years |
| | 22 years |
| | 23 years |
| | 24 years |
| | 25 years |
| | 26+ years |
| | |
| How many years of education do you have? | 10 or less |
| | 11 |
| | 12 (Completed High School) |
| | 13 (Some College) |
| | 14 (Completed College or Associate degree) |
| | 15 (Some University) |
| | 16 (Completed Bachelor's degree) |
| | 17 (Some graduate studies) |
| | 18 (Completed Master's degree) |
| | 19 |
| | 20 or more |

Table D3

*Employee Satisfaction Questions*

| Question | Possible responses | | | | |
|---|---|---|---|---|---|
| Employee job satisfaction | | | | | |
| Overall, how satisfied are you working at the Customer Contact Centre? | | Very satisfied | Somewhat satisfied | Somewhat dissatisfied | Very dissatisfied |
| How likely are you to recommend the Customer Contact Centre as a place to work? | Definitely will | Probably will | Might or might not | Probably will not | Definitely will not |
| I am proud to work for Bank XYZ. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| I rarely think about looking for a new job with another company. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| Empowerment | | | | | |
| What percentage of your calls do you believe that you have full control over to resolve the customer's call? | Response choices given in 10% increments from *0% – 10%* to *91% – 100%* | | | | |
| CSR satisfaction with supervisor | | | | | |
| My direct supervisor effectively communicates goals and objectives. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| My direct supervisor keeps his or her commitments. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| My direct supervisor treats me with respect. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| My direct supervisor takes appropriate action to resolve my concerns. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| My direct supervisor takes a personal interest in my career development. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
| My direct supervisor gives me feedback that helps me improve my performance. | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |

Appendix E: Results
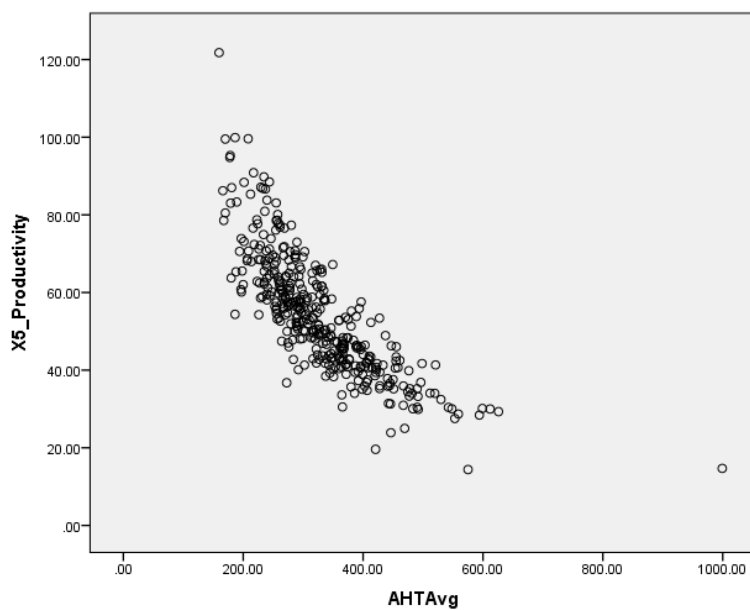


*Figure E1*. Scatterplot of productivity comparison.

**Model 1**
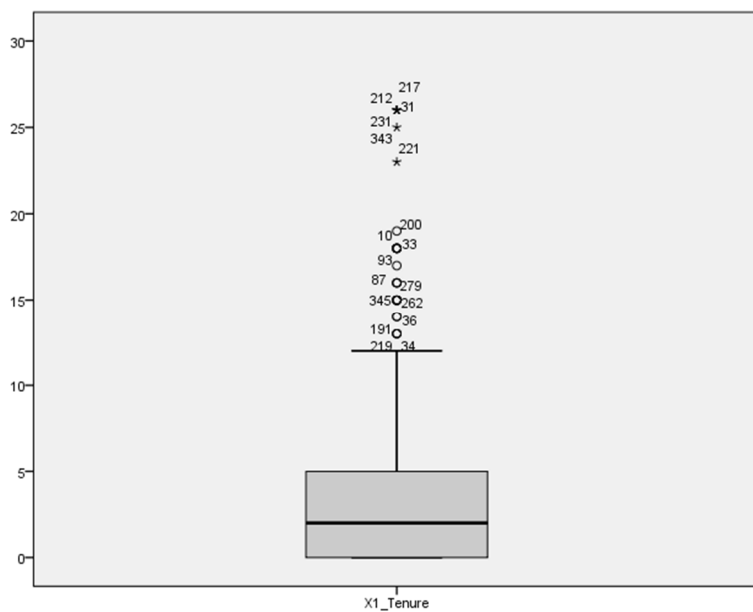


*Figure E2*. Outliers for X1_Tenure for Model 1.
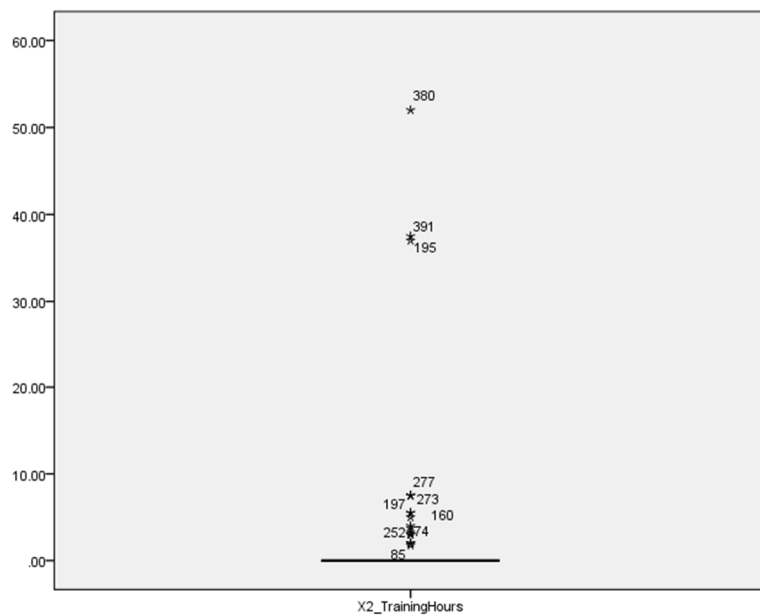
*Figure E3*. Outliers for X2_TrainingHours for Model 1.
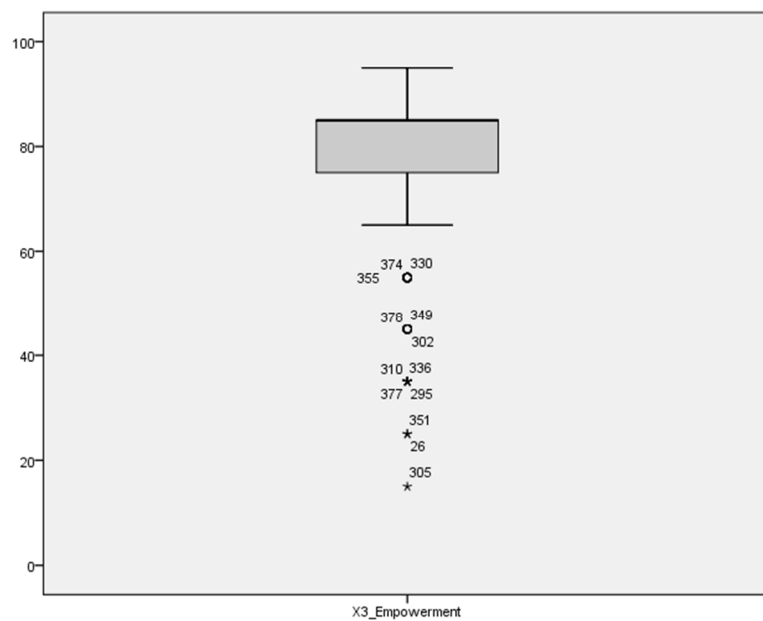


*Figure E4*. Outliers for X3_Empowerment for Model 1.

*Figure E5*. Outliers for X4_Education for Model 1.
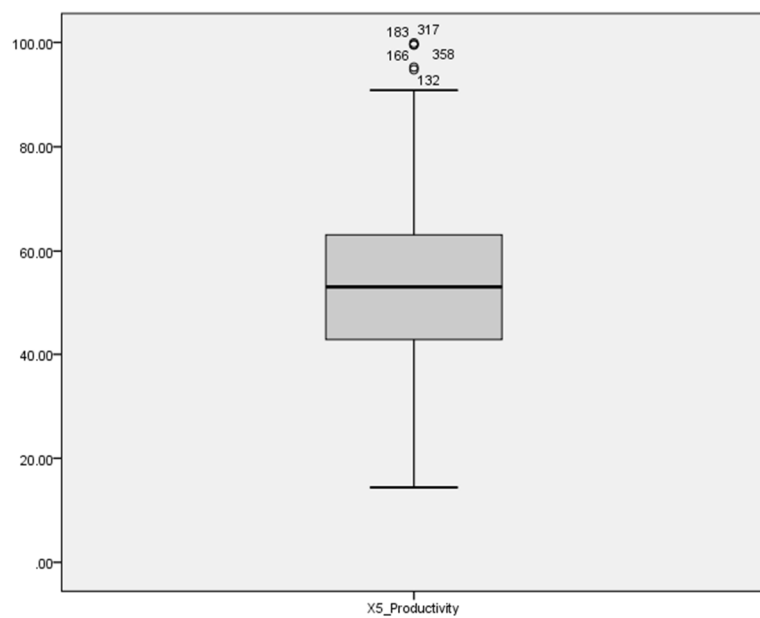


*Figure E6*. Outliers for X5_Productivity for Model 1.
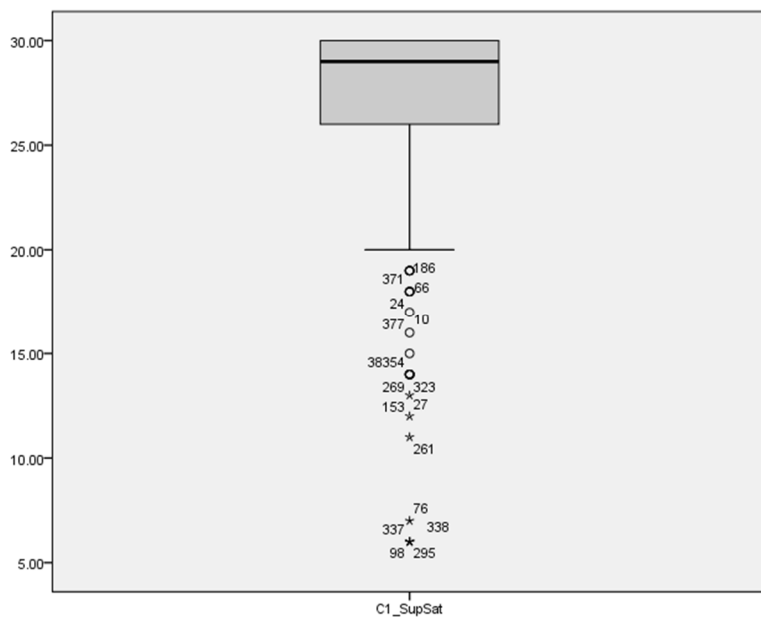
*Figure E7*. Outliers for C1_SupSat for Model 1.
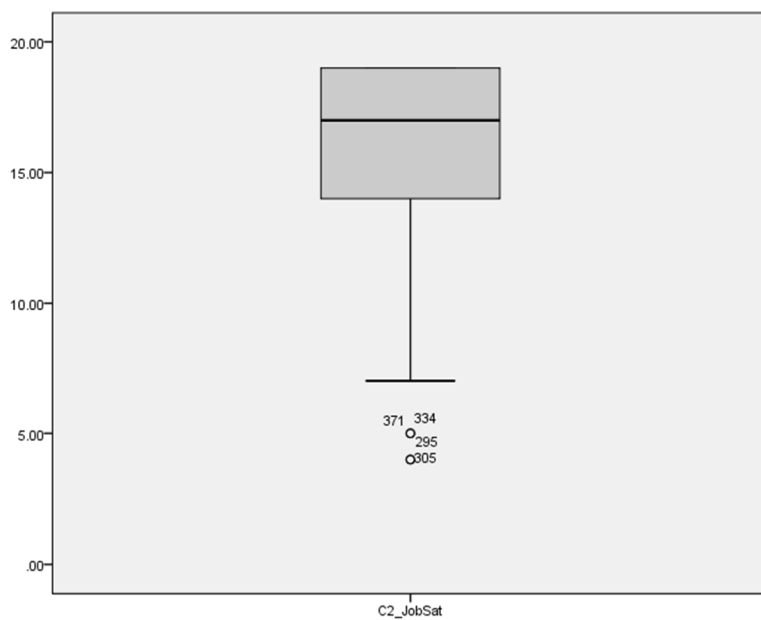


*Figure E8*. Outliers for C2_JobSat for Model 1.
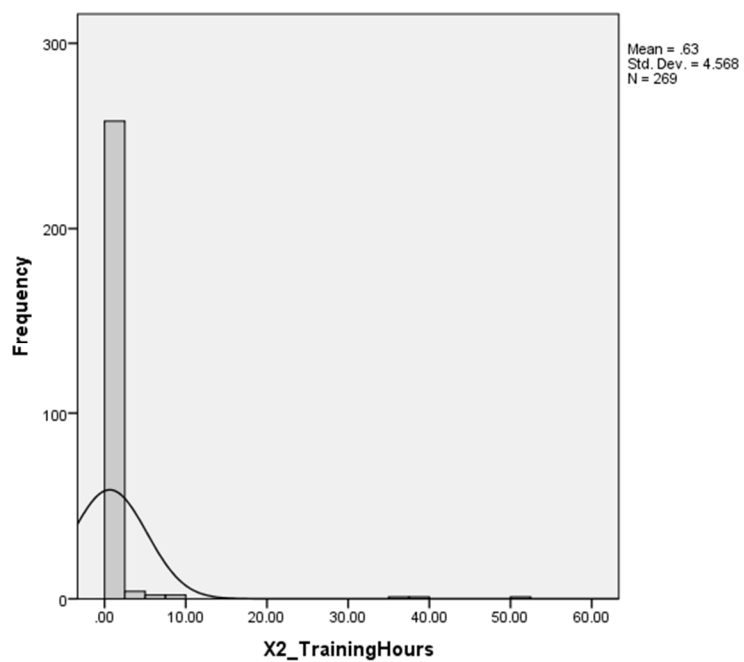
*Figure E9*. Histogram for X2_TrainingHours for Model 1.
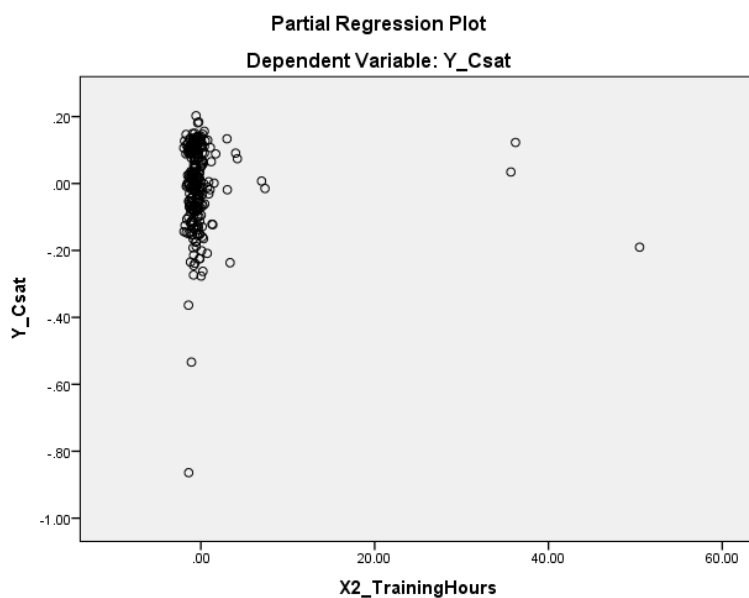


*Figure E10*. Linear relationship between Y_Csat and X2_TrainingHours for Model 1.
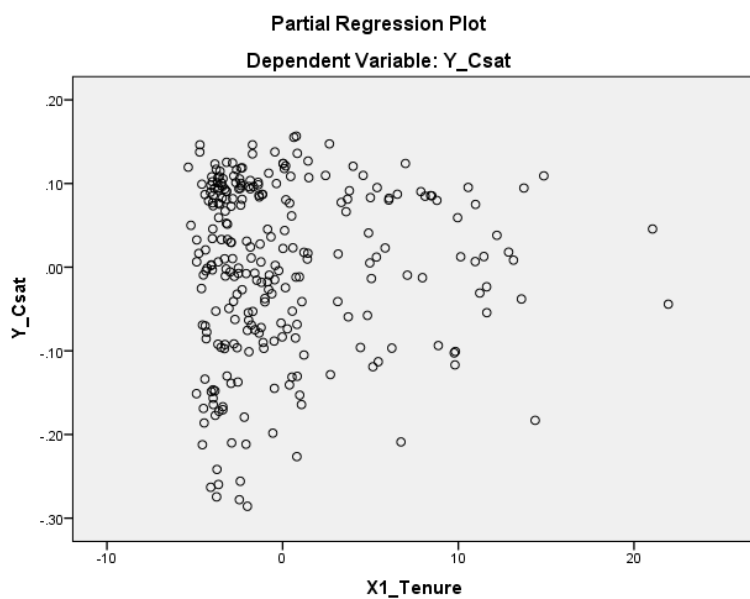
*Figure E11*. Scatterplot for dependent variable X1_Tenure for Model 1.
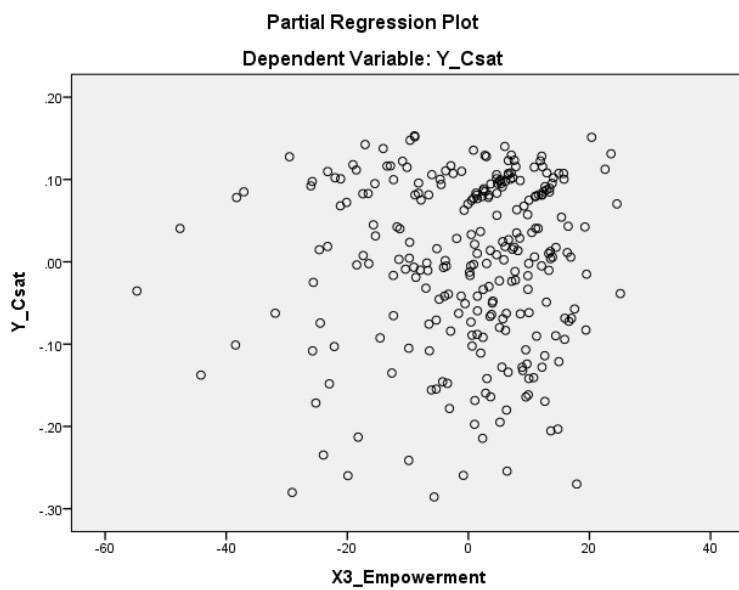


*Figure E12*. Scatterplot for dependent variable X3_Empowerment for Model 1
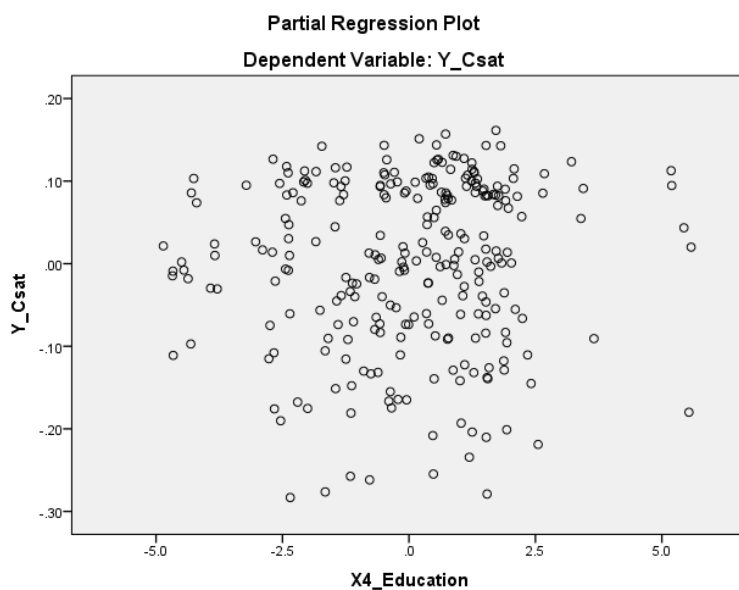
*Figure E13*. Scatterplot for dependent variable X4_Education for Model 1
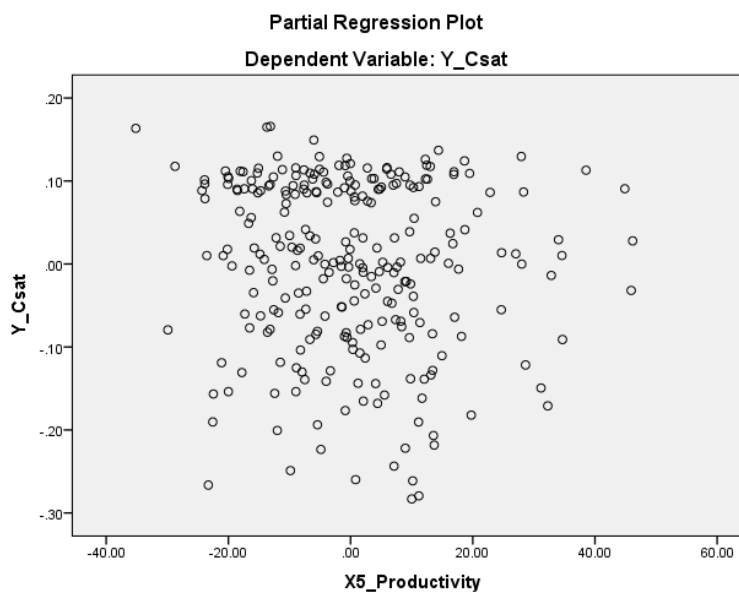


*Figure E14*. Scatterplot for dependent variable X5_Productivity for Model 1
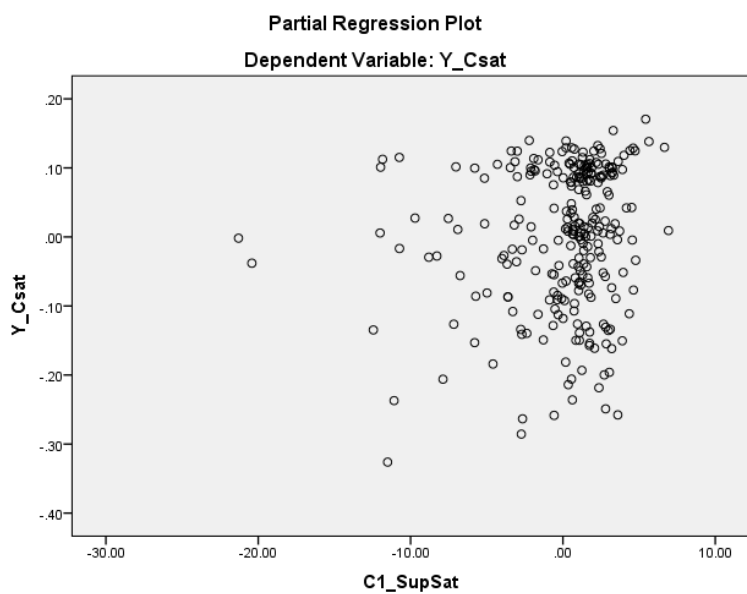
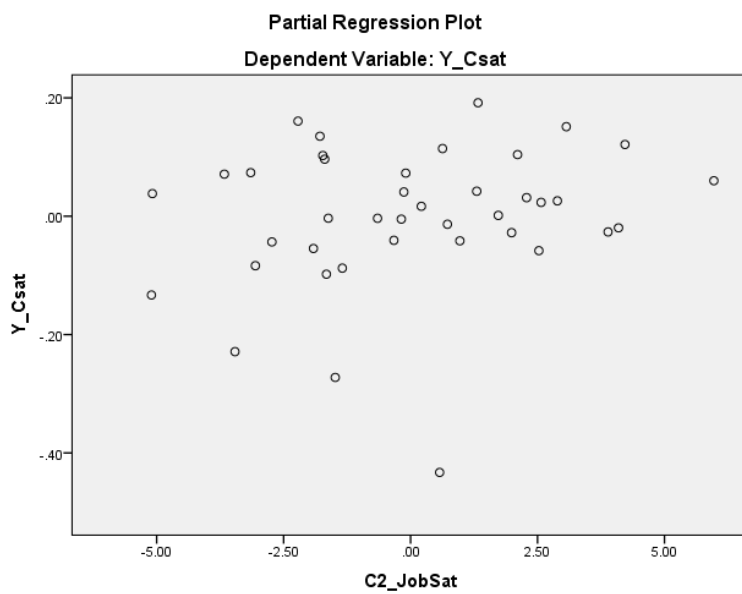*Figure E15*. Scatterplot for dependent variable C1_SupSat for Model 1
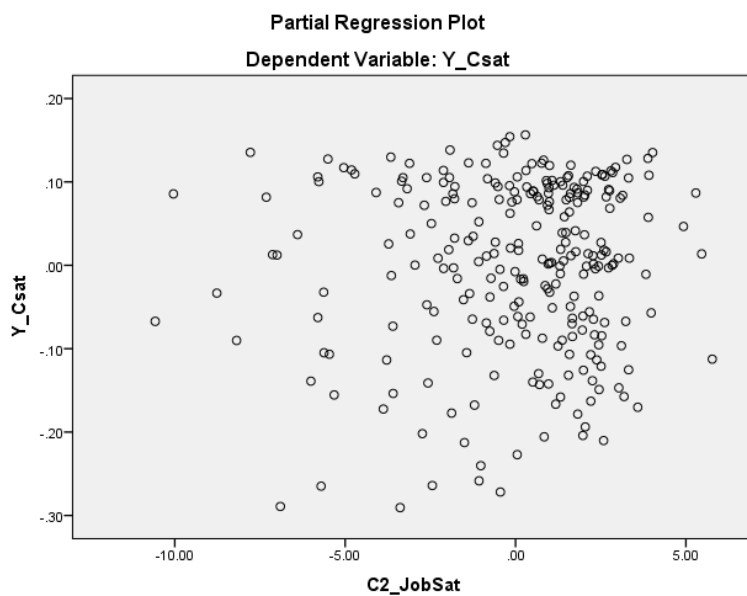


*Figure E16*. Scatterplot for dependent variable C2_JobSat for Model 1

**Model 2**
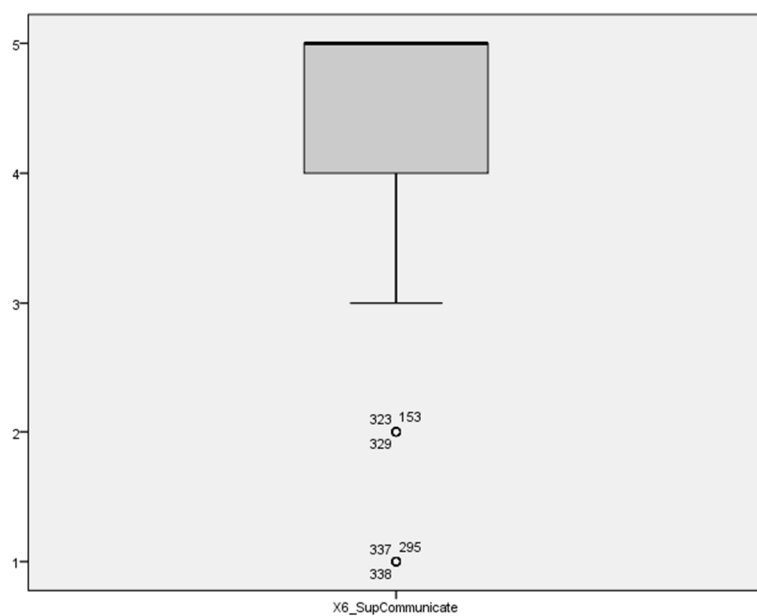


*Figure E17*. Outliers for X6_SupCommunicate for Model 2.
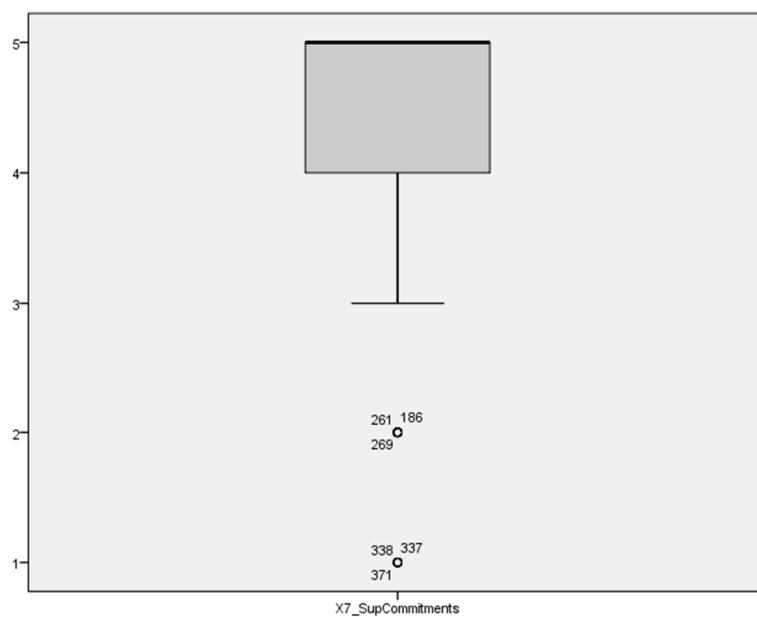


*Figure E18*. Outliers for X7_SupCommitments for Model 2.
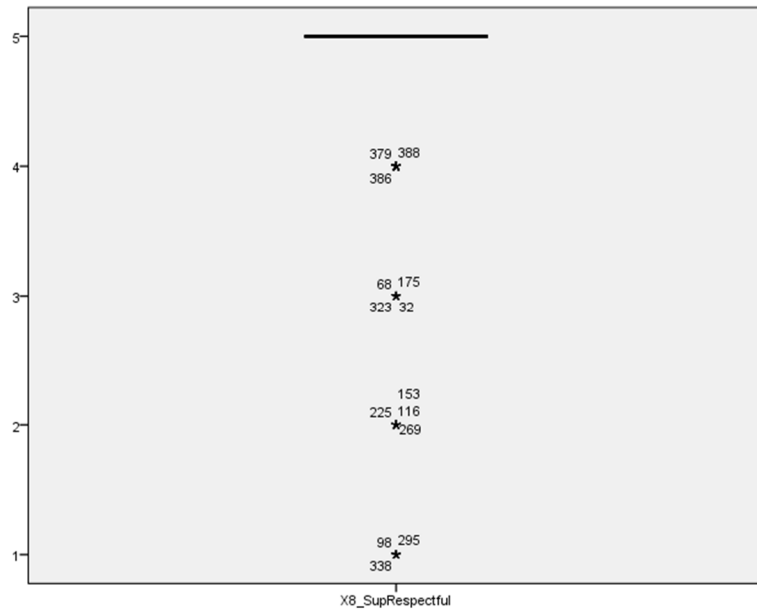
*Figure E19*. Outliers for X8_SupRespectful for Model 2.
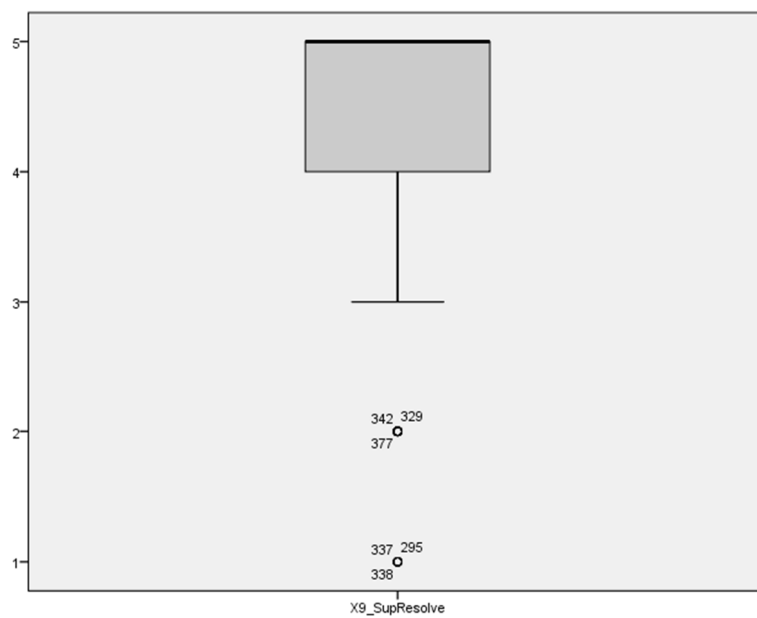


*Figure E20*. Outliers for X9_SupResolve for Model 2.
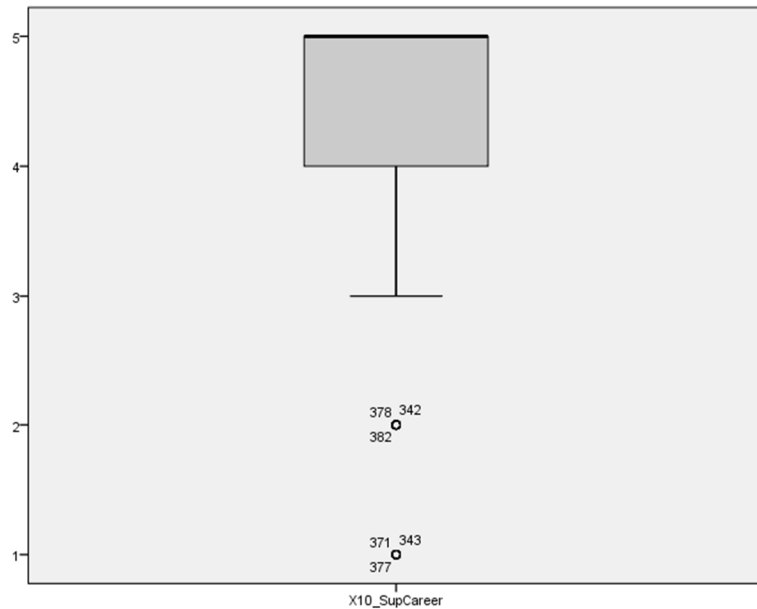
*Figure E21*. Outliers for X10_SupCareer for Model 2.
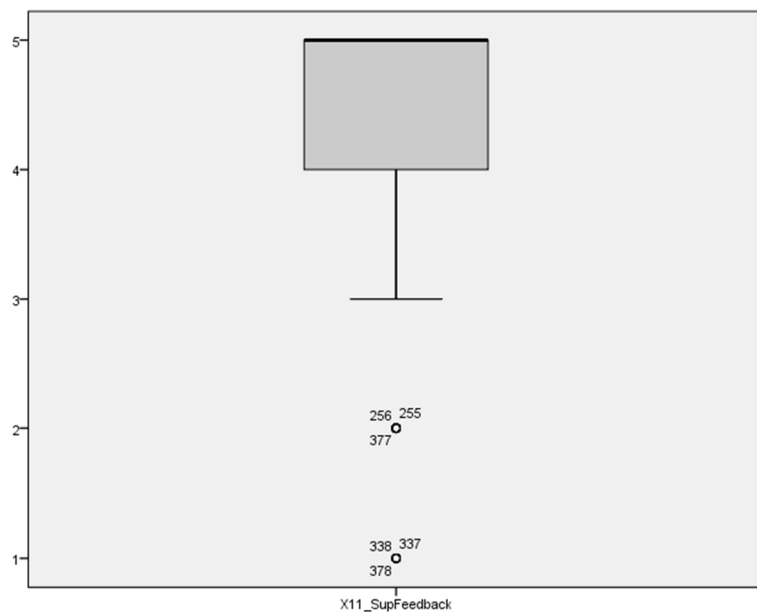


*Figure E22*. Outliers for X11_SupFeedback for Model 2.
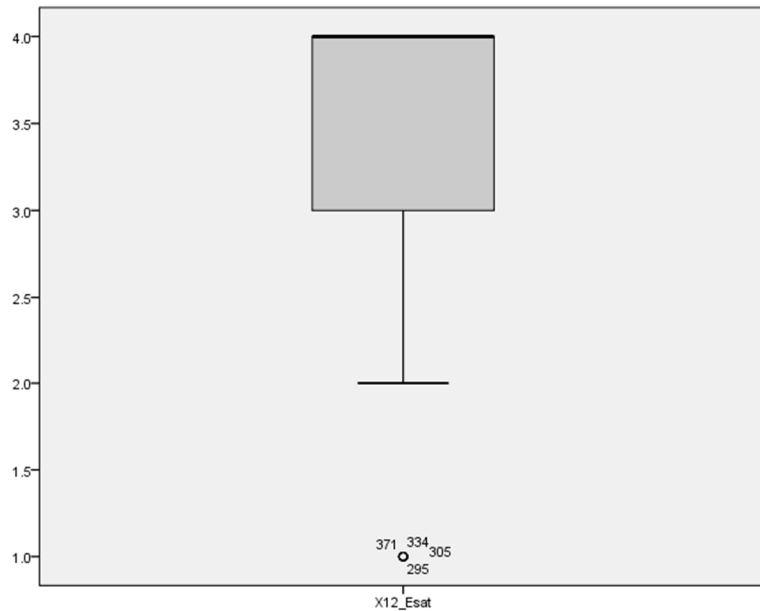
*Figure E23*. Outliers for X12_Esat for Model 2.
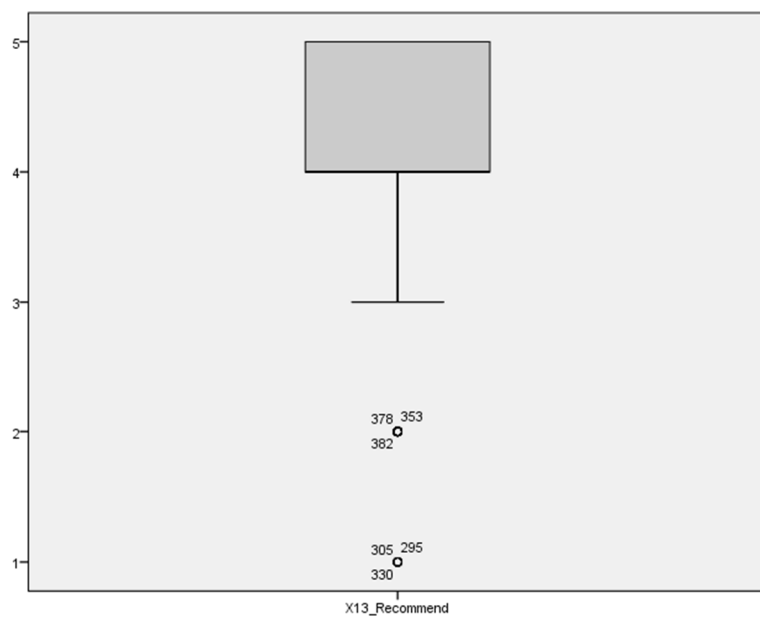


*Figure E24*. Outliers for X13_Recommend for Model 2.
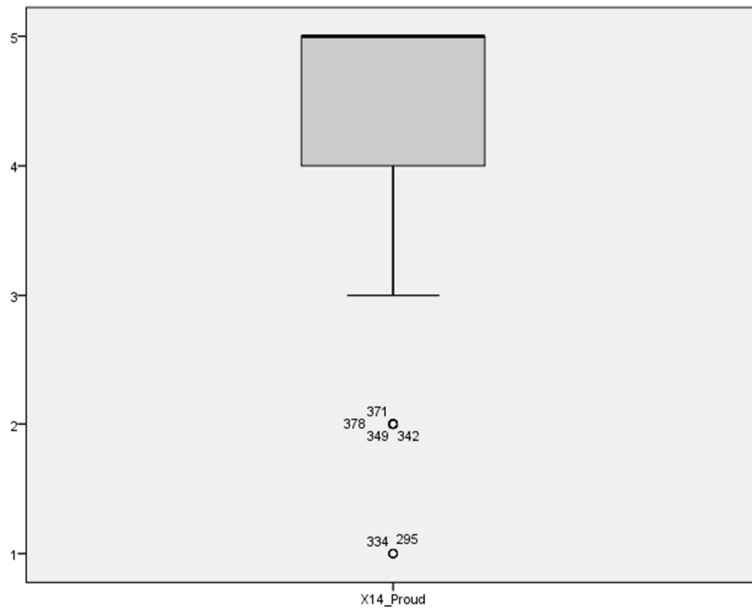
*Figure E25*. Outliers for X14_Proud for Model 2.
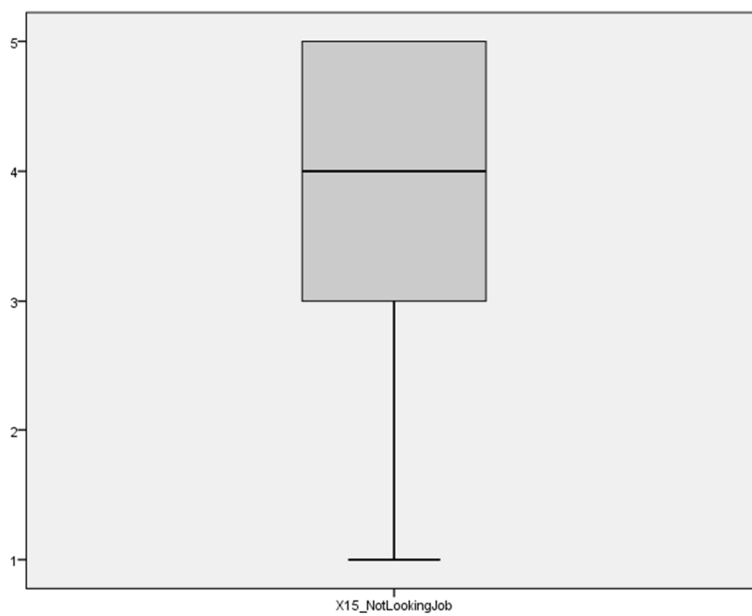


*Figure E26*. Outliers for X15_NotLookingJob for Model 2.

**Model 3**
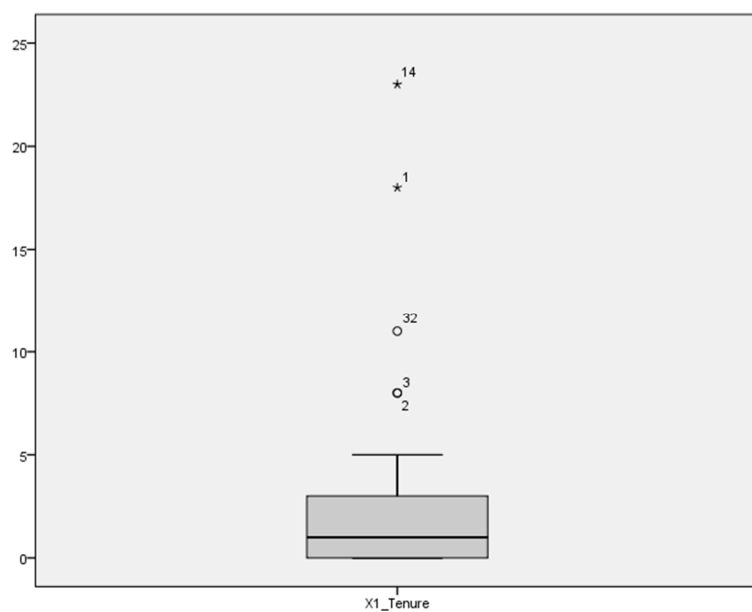


*Figure E27*. Outliers for X1_Tenure for Model 3.
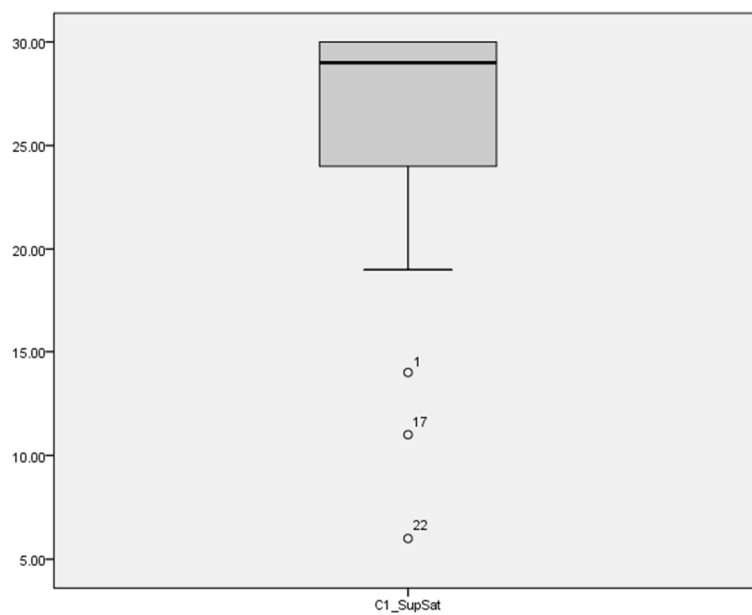


*Figure E28*. Outliers for C1_SupSat for Model 3.
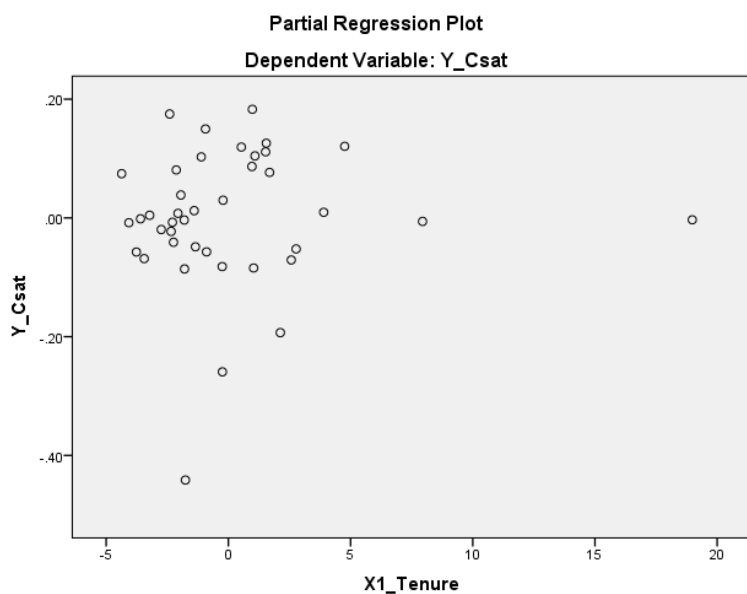
*Figure E29*. Scatterplot for dependent variable X1_Tenure for Model 3.
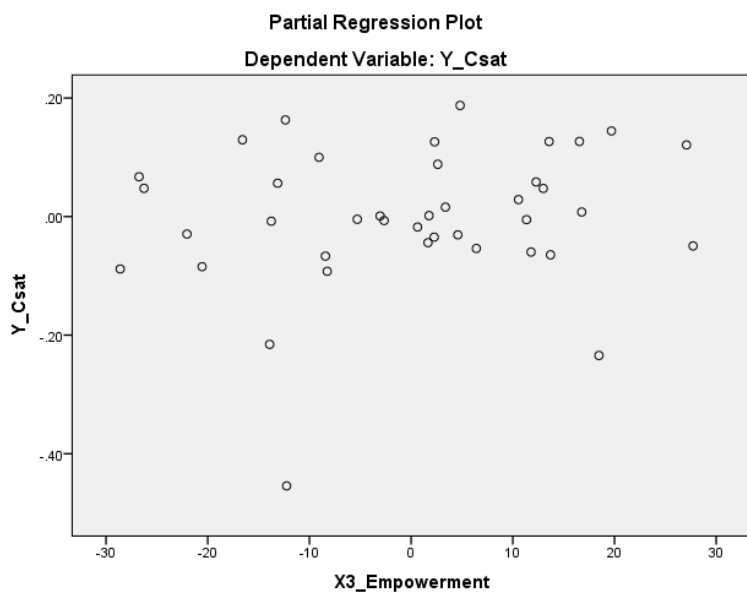


*Figure E30*. Scatterplot for dependent variable X3_Empowerment for Model 3
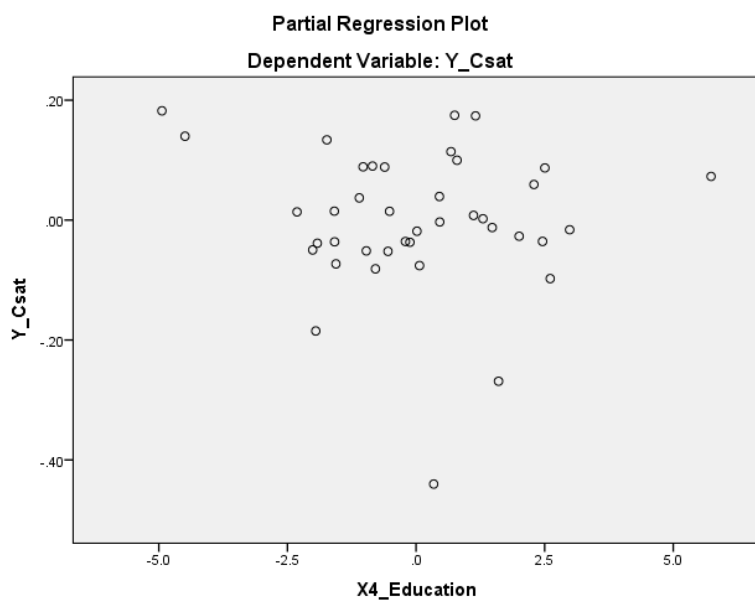
*Figure E31*. Scatterplot for dependent variable X4_Education for Model 3
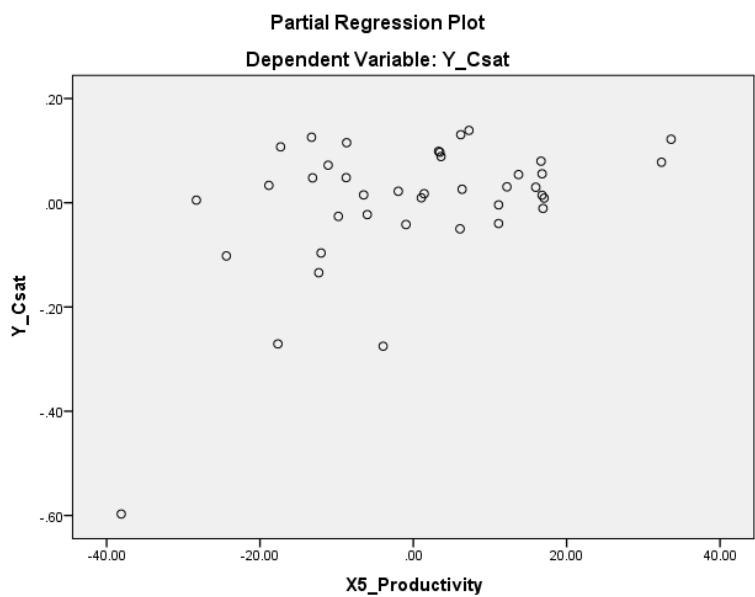


*Figure E32*. Scatterplot for dependent variable X5_Productivity for Model 3
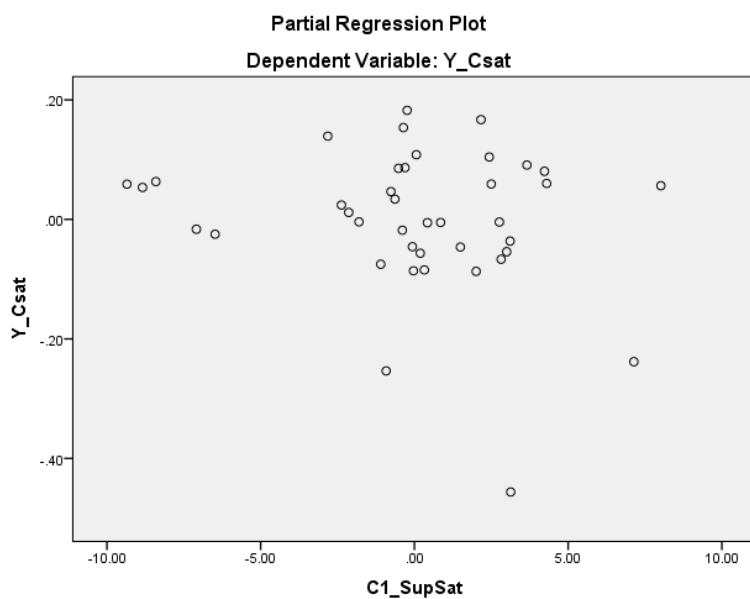
*Figure E33*. Scatterplot for dependent variable C1_SupSat for Model 3



*Figure E34*. Scatterplot for dependent variable C2_JobSat for Model 3

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Table E1

*Output of VIF for Model 3*

|  | Collinearity Statistics | |
| --- | --- | --- |
| Variable | Tolerance | VIF |
| X1_Tenure | .926 | 1.080 |
| X3_Empowerment | .722 | 1.384 |
| X4_Education | .935 | 1.070 |
| X5_Productivity | .918 | 1.089 |
| C1_SupSat | .504 | 1.985 |
| C2_JobSat | .448 | 2.233 |

Table E2

*Correlations of the Independent Variables for Model 3*

| Variable name | X1 | X3 | X4 | X5 | C1 | C2 |
| --- | --- | --- | --- | --- | --- | --- |
| X1_Tenure | 1.000 | -.013 | -.129 | .096 | .039 | .170 |
| X3_Empowerment | -.013 | 1.000 | -.145 | -.027 | .383 | .490 |
| X4_Education | -.129 | -.145 | 1.000 | -.160 | -.040 | -.055 |
| X5_Productivity | .096 | -.027 | -.160 | 1.000 | .187 | .079 |
| C1_SupSat | .039 | .383 | -.040 | .187 | 1.000 | .683 |
| C2_JobSat | .170 | .490 | -.055 | .079 | .683 | 1.000 |

**Model 4**
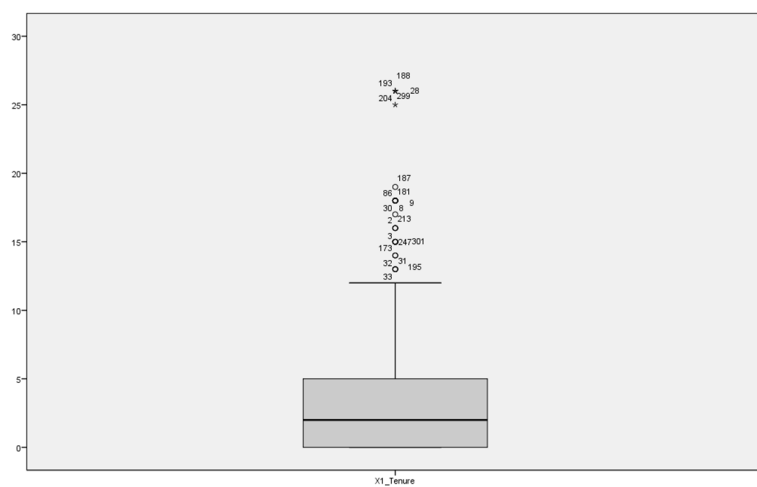


*Figure E35* Outliers for X1_Tenure for Model 4.
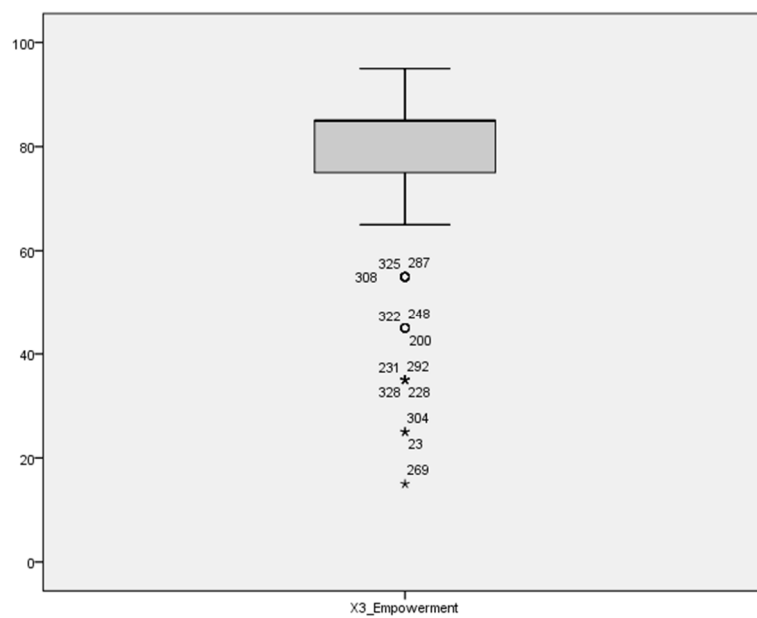


*Figure E36*. Outliers for X3_Empowerment for Model 4.
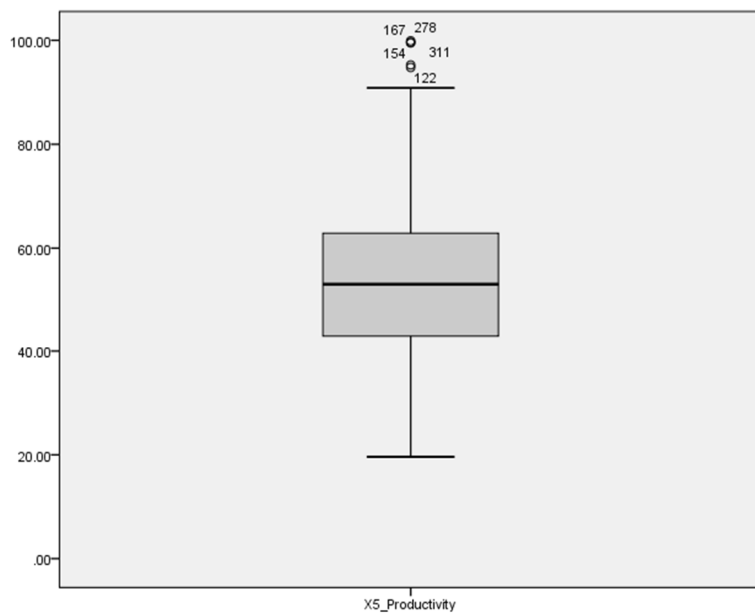
*Figure E37*. Outliers for X5_Productivity for Model 4.
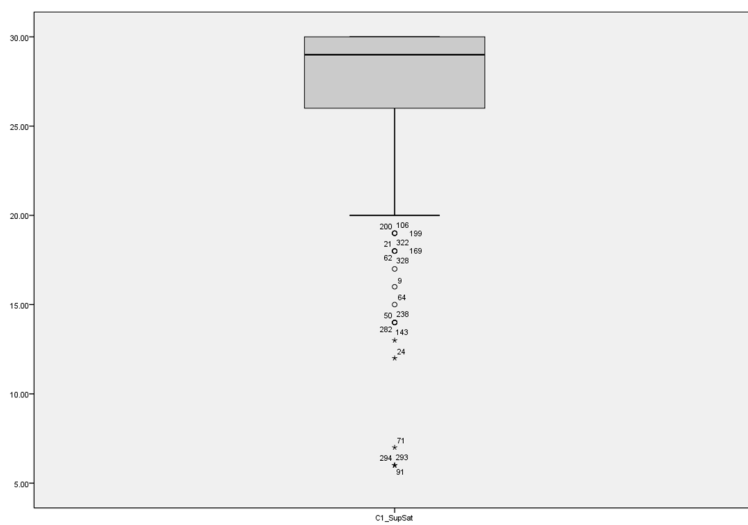


*Figure E38*. Outliers for C1_SupSat for Model 4.

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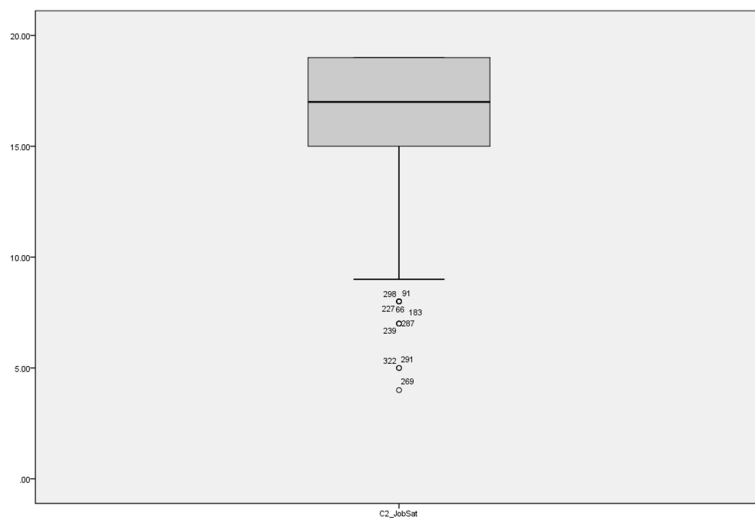

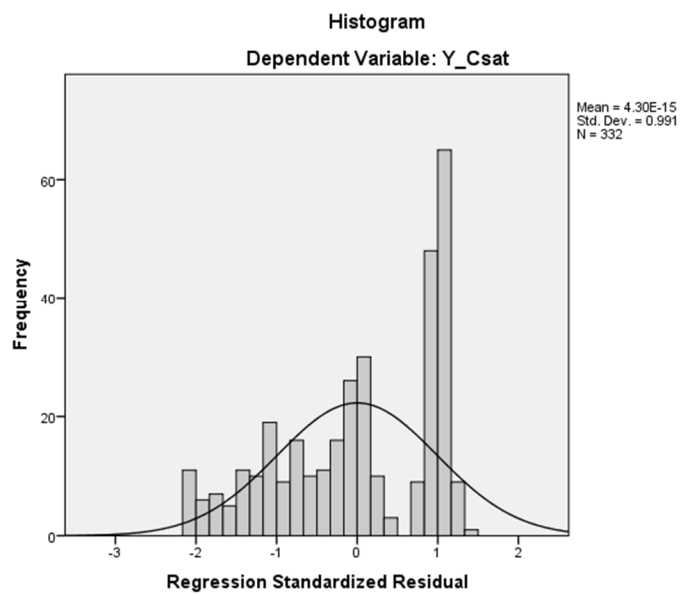
*Figure E39*. Outliers for C2_JobSat for Model 4.



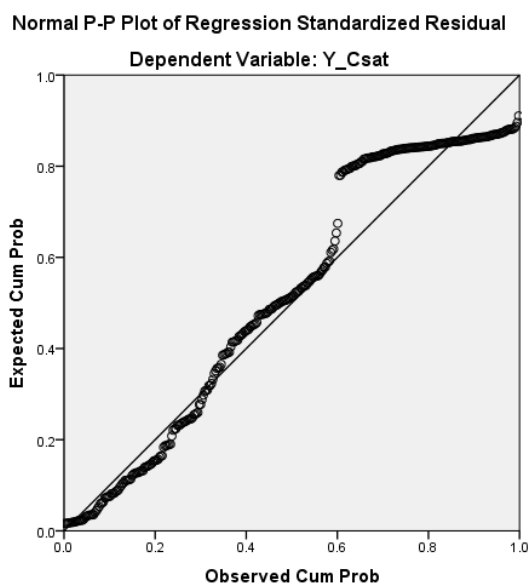*Figure E40*. Histogram for Regression Standardized Residual for Model 4.

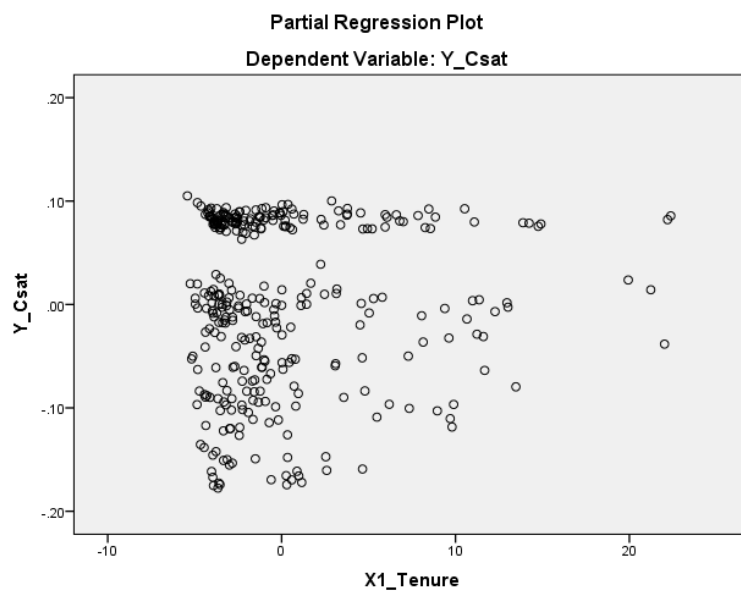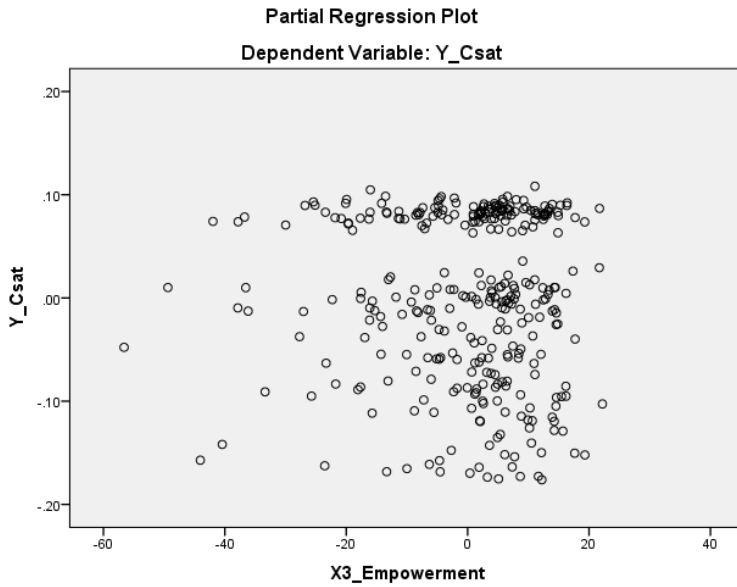*Figure E41*. Normal P-P plot for six variable regression Model 4.



*Figure E42*. Scatterplot for dependent variable X1_Tenure for Model 4.

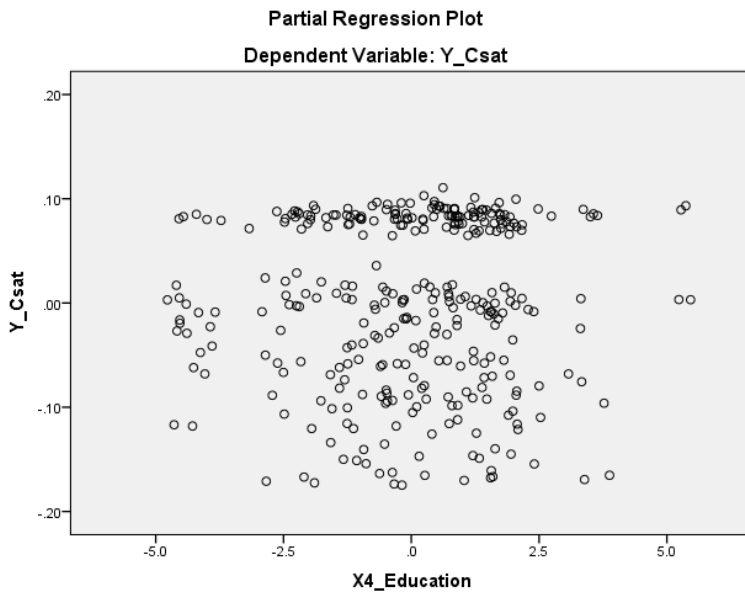*Figure E43*. Scatterplot for dependent variable X3_Empowerment for Model 4



*Figure E44*. Scatterplot for dependent variable X4_Education for Model 4
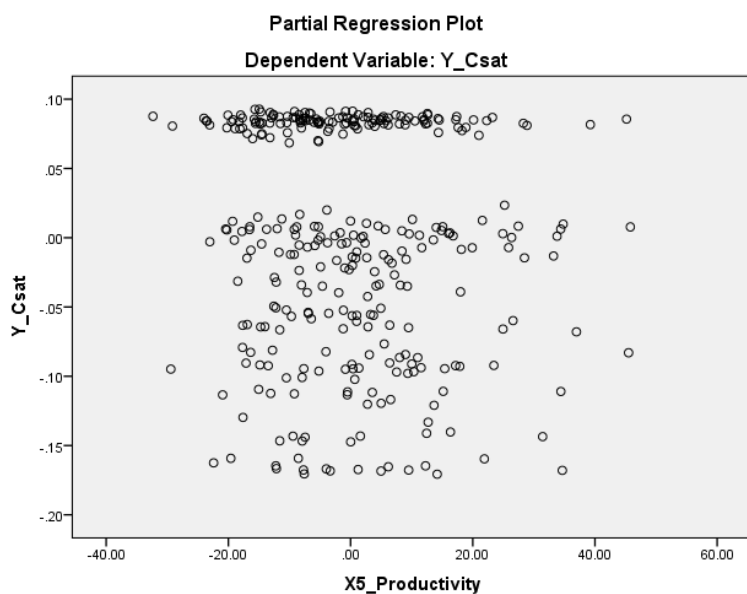
*Figure E45.* Scatterplot for dependent variable X5_Productivity for Model 4
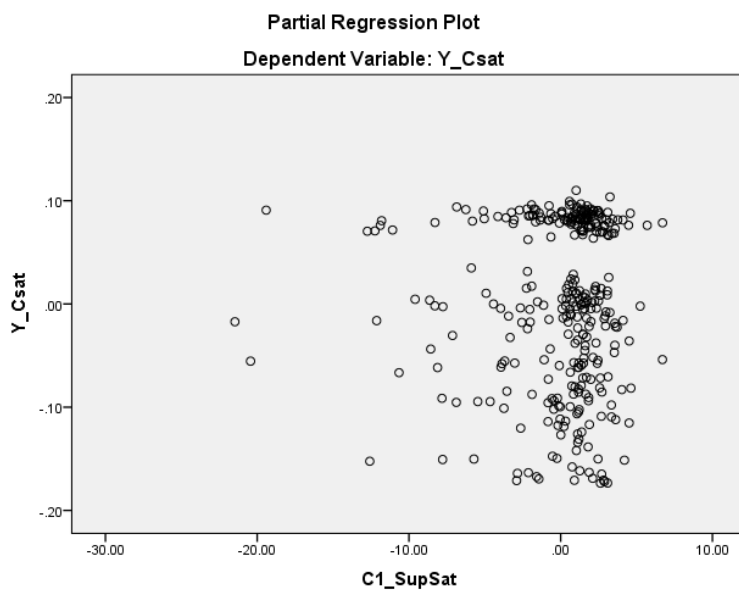


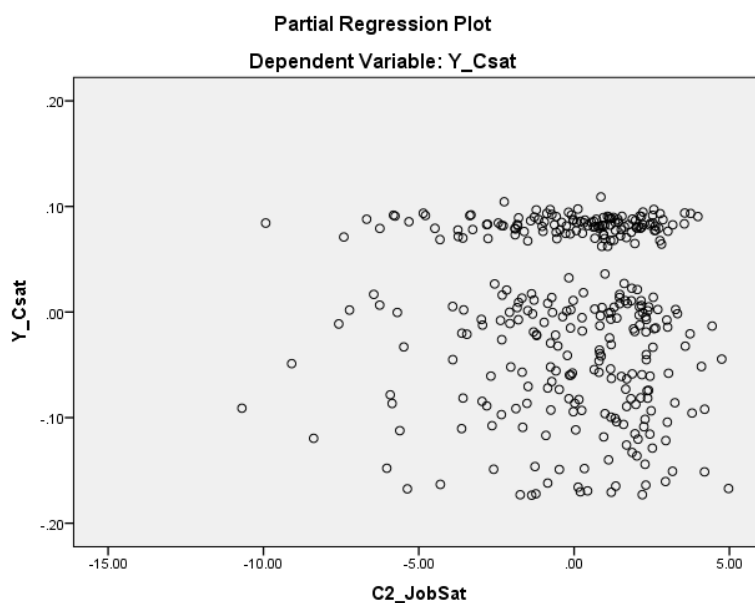*Figure E46.* Scatterplot for dependent variable C1_SupSat for Model 4

*Figure E47*. Scatterplot for dependent variable C2_JobSat for Model 4

Table E3

*Output of VIF for Model 4*

| | Collinearity Statistics | |
| --- | --- | --- |
| Variable | Tolerance | VIF |
| X1_Tenure | .989 | 1.011 |
| X3_Empowerment | .943 | 1.061 |
| X4_Education | .957 | 1.045 |
| X5_Productivity | .940 | 1.064 |
| C1_SupSat | .889 | 1.125 |
| C2_JobSat | .854 | 1.171 |

Table E4

*Correlations of the Independent Variables for Model 4*

| Variable name | X1 | X3 | X4 | X5 | C1 | C2 |
|---|---|---|---|---|---|---|
| X1_Tenure | 1.000 | .048 | -.028 | .076 | .024 | -.001 |
| X3_Empowerment | .048 | 1.000 | -.035 | -.155 | .090 | .180 |
| X4_Education | -.028 | -.035 | 1.000 | .150 | .032 | -.135 |
| X5_Productivity | .076 | -.155 | .150 | 1.000 | .050 | -.093 |
| C1_SupSat | .024 | .090 | .032 | .050 | 1.000 | .314 |
| C2_JobSat | -.001 | .180 | -.135 | -.093 | .314 | 1.000 |