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Evaluating Faculty And Staff Customer Satisfaction Of A Technology Support Office In A Large University In Florida

Laurence Jaffe
University of Central Florida, jaffe@ucf.edu

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EVALUATING FACULTY AND STAFF CUSTOMER SATISFACTION
OF A TECHNOLOGY SUPPORT OFFICE IN A LARGE UNIVERSITY IN FLORIDA

by

LAURENCE H. JAFFE
B. S. Rutgers University, 1986
M. B. A. Rutgers University, 1988
M. S. Rutgers University, 1993
Ed. S. Rutgers University, 1996

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Major Professor: Kenneth Murray

ABSTRACT

This study sought to determine customer satisfaction levels of faculty and staff with their technology support office in a large university in Florida. The focus of research was to determine if there were any differences in customer satisfaction based on four demographics: gender, faculty versus staff, educational level and age. An anonymous customer satisfaction survey included 26 Likert-type scale questions measuring 16 service quality dimensions was administered to the population. The 16 service quality dimensions included 10 dimensions from Zeithaml et al. (1990), five dimensions from Besterfield et al. (1995, 2003), and one dimension, overall satisfaction.

Findings showed there was a statistically significant difference in two demographics, gender and faculty versus staff. Regarding gender, there were no differences in 14 of 16 dimensions examined. The two dimensions with differences were tangibles and understanding the customer, with males having lower customer satisfaction than females. Regarding faculty versus staff differences, there were no differences in all the dimensions other than the courtesy dimension for which faculty had a lower level of customer satisfaction level than staff. Regarding educational level and age, there were no differences in any of the 16 dimensions.

This dissertation is dedicated

to my mom and dad

who always encouraged me to continue learning.

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CHAPTER 1
THE PROBLEM AND ITS CLARIFYING COMPONENTS

Introduction

Universities are feeling the challenges of dealing with dwindling resources (Capaldi, 2011). Technology departments at universities might feel a double pinch. As more university departments try to become more efficient, they may turn to their technology managers for efficient solutions involving technology and more technology staff assistance. With the growing demand for technology products and services, a higher level of demand has been placed on the technology staff at universities. Technology managers need to handle the increased level of requests and ensure that staff are properly trained to provide quality customer service for faculty and staff in a cost-efficient manner.

An important focus of technology managers today should be on maintaining and improving customer satisfaction to the faculty, staff, and students at their institutions. Customer satisfaction has been measured in higher education by examining student satisfaction. However, there has been limited research on customer satisfaction in higher education specific to technology offices. Many researchers have examined general customer satisfaction issues from a variety of perspectives to determine how to measure customer satisfaction. Aldridge and Rowley (1998) developed a measure of customer satisfaction and determined that organizations should handle incidents that create dissatisfaction as they occur. Klaus and Maklan (2013) developed a measure called the customer experience quality (EXQ) scale which predicts how loyal a customer is to the

service and how much they recommend the service. Zeithaml, Parasuraman, and Berry (1990) developed a service quality measure called SERVQUAL based on customer perceptions and expectations.

Customer service has become a concern due to the increased level of competition in education (Arena, Arnaboldi, & Azzone, 2010). The competition in schools is present internationally. For example, a study of universities in Italy showed the most important concern of students when dealing with administrative services were "personnel courtesy, competence, and the availability of student support service channels alternative to the front office" (Arena et al., 2010, p. 952). Italy has enacted reforms in education because of market competition (Arena et al., 2010). The same logic for customer service for students needs to exist internally in the offices that support faculty and staff. If faculty and staff have negative views of the technology office because of poor customer service, they may be less likely to request technology support.

The premise is that faculty and staff members at universities obtain extensive knowledge in their field and typically use technology to maximize productivity. The current technological age has affected the amount of technology support that is necessary for faculty and staff in education. Faculty and staff must receive appropriate technology support to be productive members of today's workforce. In the 21st century educational environment, there are many different ways that technology support is provided for faculty and staff. Universities typically have technology departments that serve faculty and staff to support their different technology needs. Faculty and staff at universities may request technology support to remedy an issue with their computers, to stay up to

date on the newest technology, or to assist them in performing a technical task. A technology office should have an environment that offers appropriate and effective technology support as well as a simple method to handle the requests for support.

Faculty and staff, the customers of a technology support office, should receive support that allows for high levels of customer satisfaction. In order to achieve effective customer service, the technology manager must have a thorough understanding of the different elements of customer service required. A manager should be familiar with management concepts including customer service and total quality management (TQM). TQM is a management philosophy that focuses on continuous improvement of products or services and being responsive to customer needs (Besterfield, Besterfield-Michna, Besterfield, & Besterfield-Sacre, 2003). A successful manager must understand how to provide appropriate customer service and apply TQM strategies (Besterfield et al., 2003).

The varied demographic characteristics of faculty and staff may influence how they view customer service in a technology support office. Gender, faculty versus staff status, educational level, and age of faculty or staff members might influence how they perceive customer satisfaction in a technology support office. A report in 2007 from the American Association of Retired Persons (AARP) indicated that 39% of workers age 50+ from G7 countries were planning on working even after they retired (Lee, Czaja, & Sharit, 2009). An older workforce might require different types of technology support to be satisfied. There also could be a difference in whether the person making the request is a faculty or a staff member. A technology manager must understand customer service

and the different demographics served by the technology office in order to have a successful technology department.

Great customer service, customer involvement, and customer happiness not only benefit the customer, but also benefit the employee providing the service. Researchers have shown that "interactions with verbally aggressive customers" (Goussinsky, 2011, p. 221) affect how well the employee enjoys their position and their job satisfaction. Yim, Chan, and Lam (2012) confirmed that customer participation creates "value cocreation" (p. 122) leading to positive outcomes for both the employee and customer. High self-efficacy and customer participation create more happiness in a workplace (Yim et al., 2012). This would indicate that training of employees on their skills as well as having customers involved could lead to a better climate in the workplace.

Technology support managers should be trained to recognize faculty and staff traits and train their employees effectively. The training will allow technology staff to adapt to different customers to achieve a higher level of customer satisfaction. It is important to have excellent communication and timely responses to requests from faculty and staff members in this fast-paced, technology-driven environment. Customer service by a technology department will impact the success of faculty and staff. Thus, since technology support adds to the productivity of faculty and staff, it is important for technology staff to understand customer service as well as demographic traits that may affect the perceived customer satisfaction levels.

Statement of the Problem

The problem of this study is that there has been very limited research conducted on university technology departments' customer satisfaction levels examining the demographic characteristics of the faculty and staff. Technology managers must create a high level of customer service in their departments in order to be successful. There may be a difference in how different faculty and staff perceive a technology department's customer service based on their gender, whether they are faculty or staff members, their educational level, or their age. It is important to understand how customer service should be implemented so that all faculty and staff perceive customer satisfaction levels effectively.

Purpose of the Study

The purpose of this study was to determine what differences may exist in customer satisfaction levels of higher education faculty and staff with regard to the services provided by a university technology department. At the time of the study, there was a void in literature examining which demographic characteristics were indicators of different levels of customer satisfaction in a technology department. Technology managers can better implement customer service in their departments knowing which demographic characteristics have different customer satisfaction levels. The purpose of this study, therefore, was to determine which demographic characteristics had different levels of customer satisfaction in one technology department at a university.

This study expanded on the work of Niederriter (1999) which focused on assessing customer satisfaction in information technology departments at community colleges. The Niederriter study was conducted to determine if there was a difference in customer satisfaction levels based on TQM principles at a community college. The specific focus of the present study was to determine if there were differing levels of customer satisfaction based on demographic variables within a university. Thus, this study added to existing research by providing further understanding of demographic differences in customer satisfaction levels in technology departments at universities.

Conceptual Framework

There has been a variety of research on quality services, customer satisfaction, and TQM. Parasuranam, Zeithaml, and Berry (1985) researched a measure of consumer perceptions of service quality beginning with exploratory research and leading to more detailed research. Zeithaml et al. (1990) conducted extensive research on measuring quality services and determined 10 dimensions of quality service which eventually became five dimensions known as SERVQUAL. Besterfield, Besterfield-Michna, Besterfield, and Besterfield-Sacre (1995) stated five dimensions to measure service quality. Niedderiter (1999) used the works of Zeithaml et al. (1990) and Besterfield et al. (1995), in the first edition of their work, to develop a survey to measure customer satisfaction in an information technology department. Nwankwo (2007) used a modified version of Niederriter's instrument to further analyze this specific field of research.

Zeithaml et al. (1990) developed 10 dimensions of quality service. These researchers began with an exploratory study of 12 groups representing four service sectors including "retail banking, credit cards, securities brokerage, and product repair and maintenance" (Zeithaml et al., 1990, p. 17). The groups were asked questions related to "satisfaction and dissatisfaction with the service," "descriptions of an ideal service," "factors important in evaluating service quality," and "performance expectations concerning the service" (Zeithaml et al., 1990, p. 18). Their research led to common issues regardless of the sector analyzed. Their research from their exploratory study led them to a definition of service quality and major factors impacting what a customer expects from a service. Their research defined service quality as "the extent of discrepancy between customers' expectations or desires and their perspectives" (Zeithaml et al., 1990, p. 19). The 10 dimensions that determined how customers rate the quality of service are "tangibles, reliability, responsiveness, competence, courtesy, credibility, security, access, communication, and understanding the customer" (Zeithaml, 1990, p. 20).

Zeithaml et al. (1990) looked to develop an instrument based on statistical principles. In this research phase they used five sectors in customer surveys, and the results ultimately led to an instrument called SERVQUAL. The original 10 dimensions for measuring service quality remained the same; however, they were categorized into five groups. The first three dimensions comprised individual categories including tangibles, reliability, and responsiveness. The two new categories were assurance (competence, courtesy, credibility, and security) and empathy (access, communication,

and understanding the customer). Zeithaml et al.'s 1990 research showed that reliability was the most important of the categories. However, their research showed that all 10 original dimensions were important factors in determining customer service quality.

Besterfield et al. (2003) viewed customer service as being based on five dimensions of quality service which can measure customer satisfaction using TQM principles. The five dimensions were "organization," "customer care," "communication," "front-line people," and "leadership" (Besterfield et al., 2003, pp. 76-77). Besterfield et al. (2003) stated that the five dimensions were based on the work of Deming and Juran and others. Deming's work was in the manufacturing sector, but the same principles can be applied when looking at customer service in the service sector. Researchers have shown that TQM can allow for continuous improvement in end-user computing by encouraging empowerment. This, in turn, leads to higher levels of customer satisfaction for both internal and external customers (Chang & Shen, 1997). Productivity increases as managers are more familiar with the TQM approach (Tanninen, Puumalainen, & Sandström, 2010). Thus, the five dimensions related to TQM principles are important for a technology support department to understand in order to maximize customer satisfaction levels.

Two doctoral dissertations used the quality service dimensions of both Zeithaml et al. (1990) and Besterfield et al. (1995) and measured customer satisfaction with technology departments at community colleges (Niederriter, 1999; Nwankwo, 2007). Niederriter (1999) created a survey using the dimensions identified by Zeithaml et al. (1990) and Besterfield et al. (1995) that measured customer satisfaction. Niederriter

analyzed customer satisfaction with a campus technology department in a community college in Arizona. One of the findings was that there was no statistically significant difference between faculty and staff in their customer satisfaction levels. Nwankwo (2007) used the same service quality dimensions to analyze an information technology department at a community college in Texas. Nwankwo found that a few of the quality dimensions, including communication, needed improvement, and that this type of study would establish a reference point to measure future results.

SERVQUAL has been widely used by other researchers and has been recognized as a method of measuring service quality and customer satisfaction. SERVQUAL has been used to measure a wide range of items since the development of the instrument. However, there has been some criticism of the SERVQUAL model. Cronin and Taylor (1992) developed SERVPERF, a performance-based measure approach and believed their measure was a more efficient method of measuring service quality than SERVQUAL. Cronin and Taylor (1992) indicated in their limitations that perceived quality might be more important when measuring situations that require a higher standard than just minimum levels (Cronin & Taylor, 1992).

Researchers have continued to use SERVQUAL as a very common method of measuring service quality in many fields, among them technology in education. SERVQUAL was used to measure (a) the perceived quality of an e-learning system (Udo, Bagchi, & Kirs, 2011); (b) the quality of educational services in vocational and technical schools (Akhlaghi, Amini, & Akhlaghi, 2012); and (c) student ratings in a higher education setting to determine if they were an appropriate measure for rating instructors

on their teaching effectiveness (Chatterjee, Ghosh, & Bandyopadhyay, 2009). It is evident that SERVQUAL has become a major instrument today in determining service levels in organizations.

Research Questions and Hypotheses

The following research questions and null hypotheses were used to guide this study:

1. What is the difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff?

    H_{01} There is no difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff.

2. What is the difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff?

    H_{02} There is no difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff.

3. What is the difference in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff?

H_{03} There is no difference in customer satisfaction using TQM principles in a

technology office at a large university based on the educational level of

faculty and staff.

4. What is the difference in customer satisfaction using TQM principles in a

technology office at a large university based on the age of faculty and staff?

H_{04} There is no difference in customer satisfaction using TQM principles in a

technology office at a large university based on the age of faculty and staff.

Definition of Terms

Age: Age is the faculty and staff age at the time of the survey categorized in the

following groupings: 18-29, 30-39, 40-49, 50-59, 60-69, or 70+.

Customer: Customer is anyone who interacts with the technology support

department.

Customer Satisfaction: Customer satisfaction is measured by a survey that

determines faculty and staff customer satisfaction level.

Educational Level: Educational level is the highest educational attainment level

that the faculty and staff member has completed at the time of the survey. Educational

level will be represented by the following five categories: (a) completed high school

diploma or GED, (b) completed associates degree or technical certification, (c) completed

four-year degree, (d) completed master's degree, and (e) completed doctoral degree or

other terminal degree.

Qualtrics: Qualtrics is an online survey platform that will be used to implement the survey. Qualtrics is a registered trademark of Qualtrics located in Provo, Utah.

SERVQUAL: SERVQUAL is an instrument developed by Zeithaml et al. (1990) to measure service quality.

Total Quality Management (TQM): TQM is the management philosophy that refers to the continuous improvement process and customer needs responsiveness.

Methodology

The population for this study were full-time faculty and staff members at the College of Education and Human Performance at the University of Central Florida in Orlando, Florida. The variables in the study were customer satisfaction level of faculty and staff, gender of faculty and staff, whether the employee was classified as a faculty member or a staff member, educational level, and age of faculty and staff.

In this study, gender, faculty versus staff status, educational level, and age were the independent variables and were examined to see how they might influence customer satisfaction level which was the dependent variable. An online survey was sent to all University of Central Florida College of Education and Human Performance full-time faculty and full-time staff using Qualtrics. Qualtrics is an online survey platform used by over 5,000 organizations including over 160 academic institutions (Industry, 2013). Qualtrics allows for a researcher to administer and analyze surveys very efficiently. The data analysis for this study was performed using Qualtrics software of the Qualtrics Research Suite.

The survey used was based on the survey used by Niederriter (1999) in her

dissertation which assessed customer satisfaction in a community college using TQM

principles. Permission to use and modify the survey by Niederriter was obtained by the

researcher in June, 2013, as shown in Appendix A. Niederriter's 1999 survey was

reprinted with permission and is contained in Appendix B. Niederriter developed the

survey using the 10 dimensions determined by Zeithaml et al. (1990), five dimensions

stated by Besterfield et al. (1995), and an additional overall satisfaction dimension. The

16 dimensions of customer satisfaction used by Niederriter and the corresponding

questions in the survey have been reprinted with permission as shown in Appendix C.

The University of Central Florida IRB review documents are shown in Appendix D. The

informed consent for IRB that was used when the survey was distributed is shown in

Appendix E. The survey by this researcher was modified slightly from the Niederriter

survey. The survey that was used in this study is shown in Appendix F, and the quality

service dimensions with the corresponding question are shown in Appendix G. Appendix

H is a listing of the alphabetized responses to survey question 29 which was an open

ended question asking for any comments regarding the technology department

respondents wished to make. The independent sample t tests and ANOVA were planned

to be used to analyze the differences in the survey results. However, due to the skewness

of the customer satisfaction data, Mann-Whitney U and Kruskal-Wallis H tests were used

instead. These tests determined if any customer satisfaction dimensions by Zeithaml et

al. (1990), Besterfield et al. (2003), and overall satisfaction dimensions were statistically

significant when examining the demographics of faculty and staff at a university.

Significance of the Study

The study was undertaken to determine demographic characteristic differences of full-time faculty and full-time staff in their customer satisfaction levels in a technology department. If there are statistically significant differences for a particular demographic, a technology manager can better determine how to improve customer service levels related to specific demographic characteristics. With growing evidence that technology is critical to be effective in the workplace, faculty and staff should receive effective customer service. If faculty and staff view the technology office as having poor customer service, this will impact their ability to receive appropriate technical support. The importance of this study was to determine any significant differences of customer satisfaction levels due to demographics so technology managers will have more information to improve their customer service strategy. By using the dimensions of Zeithaml et al. (1990) and Besterfield et al. (2003) in combination with the works of Niederriter (1999) and Nwankwo (2007), this study was conducted to better understand customer satisfaction differences associated with different demographics. Understanding the importance of customer satisfaction levels in a technology office should allow a technology department to achieve a more effective strategic plan.

Limitations

The study was limited by the following:

1. The demographics from full-time faculty and full-time staff were limited to the information and accuracy of information provided by full-time faculty and

full-time staff who responded to the survey. The study did not distinguish between full-time faculty administrators and full-time faculty non-administrators.

2. The relationship between the researcher and specific full-time faculty or full-time staff members may have created a bias in the likelihood of a response by the full-time faculty or full-time staff member. The researcher in this study was the Director of Technology and Facilities at the college being surveyed.

3. At the time of the study, the University of Central Florida was the second largest university in the United States. It is possible that a smaller university or a university in a different part of the country may have had different expectations towards customer service and technology support.

4. The study was limited in that the proximity to the technology support office of full-time faculty or full-time staff members was not considered. Faculty or staff members' whose offices were closer to the technology office than offices of other faculty members may have had easier physical access to technology support and thus have higher customer satisfaction.

<center>Delimitations</center>

The study was delimited by the following:

1. The study was delimited to full-time faculty and full-time staff at the College of Education and Human Performance at the University of Central Florida. The survey population consisted of all employees who were classified as

either full-time faculty or full-time staff 10 days before the survey was
administered. This population may have held different expectations for
customer satisfaction than faculty and staff in other disciplines.

Organization of the Study

Chapter 1 has presented an introduction to the study which included the problem
statement, purpose of the study, and conceptual framework. The research questions,
definition of terms, methodology, significance of the study, limitations, and delimitations
were also briefly discussed. Chapter 2 provides a review of literature on customer
satisfaction and generational differences, customer satisfaction and training strategies,
customer satisfaction and technology, customer service in education, total quality
management in education, measuring customer satisfaction, SERVQUAL – measuring
service quality, critics and alternatives to SERVQUAL, Besterfield et al. (2003) service
quality dimensions, and customer satisfaction in higher education. Chapter 3 includes the
method and procedures used to collect and analyze the data for this study. Chapter 4
presents the data analysis and the results of the study. Chapter 5 presents the summary,
discussion, and recommendations.

CHAPTER 2
REVIEW OF LITERATURE

<u>Introduction</u>

A customer service research study, *2012 Global Customer Services Barometer: Findings in the United States*, was completed for American Express to better understand customer service trends in businesses. In this study, based on data received online from 1,000 interviews with adults, 32% of consumers believed that in the current economy "businesses pay less attention to providing good customer service" (p. 3). At the same time, 32% of consumers believed "businesses have increased their focus on providing good customer service" (p. 3). It was also found that only 7% of consumers indicated that the experience they had when dealing with companies usually "exceed their expectations," and 43% of consumers stated businesses are "helpful, but not doing anything extra to keep your business" (pp. 4-5). The survey indicated that two-thirds of consumers will spend more when they believe excellent customer service is occurring. It was also found that consumers inform 15 people about good experiences and inform 24 people about bad experiences. Ultimately, it was determined that 55% of consumers who planned to make a transaction at a business decided not to make the transaction because of inadequate customer service they had experienced at the business (*2012 Global Customer Services Barometer*, 2012).

In the American Express study, valuable information regarding dealing with customer service representatives was found. The report indicated that when consumers lost their temper with a customer service representative, about 24% of consumers

discussed the incident using social media (*2012 Global Customer Services Barometer*, 2012). It was found that 46% of consumers who had a customer service issue wanted to speak with a person on the phone and 30% of consumers want to discuss the issue in person with someone (*2012 Global Customer Services Barometer*, 2012). A customer service representative who was discourteous and not responsive to the issue would impact consumers so significantly that consumers might consider changing the company they used for business. Regarding the size of a business, it was found that 76% of consumers believed that small businesses understand the consumer better than big businesses (*2012 Global Customer Services Barometer*, 2012). It is evident from this study that customer service is very important and businesses should focus on having a personal touch, thus making a strong, positive impression on the consumer and ultimately on the success of a business.

Traditionally, almost all service meetings have taken place where a worker and a customer were physically present (Meuter, Ostrom, Roundtree, & Bitner, 2000). However, times have changed, and service can now occur in many different forms. Researchers have examined customer satisfaction in a variety of ways to better understand what factors are important to different consumers. Many researchers have examined customer satisfaction using different methods and have arrived at road maps to appropriately implement customer satisfaction (Johnston & Kong, 2011). This customer satisfaction or service quality research started to advance significantly in the early 1980s with the initial impetus on defining service quality (Khodarayi & Khodarayi, 2011). In research that was completed in the 1980s, it was noted that business at that time and in

the future would likely need to provide outstanding service quality to be successful and survive in the future (Parasuraman, Zeithaml, & Berry, 1988). Researchers saw early on the value of customer satisfaction and knew there was a relationship to how profitable a company can be based on customer satisfaction and retaining customers for future business. It has been shown that a better cost-benefit approach for a company is to focus on reducing the number of customers who decide to defect from their company rather than take on the cost to increase their level of new customers (Zeithaml, Berry, & Parasuraman, 1996).

The value of loyal customers who continue to buy products or services and endorse the product or service is not limited to business exchanges. It also is an applicable concept with regard to educational programs and services (Hoyt & Howell, 2011). Research data on customer loyalty in 2009 on Australian universities showed a correlation with image, perceived value, customer satisfaction, and customer loyalty (Brown & Mazzarol, 2009). Customer satisfaction leads to customer loyalty, so it is important that companies take their customer service efforts seriously. Schools must review and implement better customer service models, because parents who receive an excellent level of customer service at the school are more likely to stay with the school. The brand image of a university or any type of educational business is likely to be important in other service businesses (Brown & Mazzarol, 2009). An organization needs a system that is prepared to listen to feedback when "employees or students describe obstacles they encounter in the system" (Hoyt & Howell, 2011, p. 30). It is clear that to

improve and maintain customer satisfaction levels, there should be a positive image of the business and a method in place to understand feedback for continuous improvement.

There has been a strong concern for customer service at all educational levels. In K-12 education, there are many options including charter schools, magnet schools, and a variety of other providers who are fighting for the customer (Chambers, 1998). One of the factors that helps a school system improve its long-term success, according to Chambers, is high quality customer service that includes positive attitude, appropriate behavior, and effective communication. In order to achieve effective customer service, there must be appropriate strategies by management to make sure the customer is put first and the importance of customer service is clear (Chambers, 1998). Challenges from the employee perspective are presented in the different factors that affect the job satisfaction of employees based on generational differences (Paniale, 2013). There are also a variety of training strategies for employees which affect the success of an employee (Davis, Preston, & Sahin, 2009). The training process includes understanding what type of methods should be used to train employees so they can be more effective. Training can involve using charts to understand how to greet a customer, be an active listener, or focus on what service meets customer needs (Lyons & Mattare, 2011). It is evident that customer satisfaction has a variety of influences that make the process very challenging to be effective.

In higher education, there are many options to implement customer satisfaction because schools want to retain quality students. Service quality is very important in attracting students to a university as well as retaining them so the university can generate

tuition revenue (Khodayari & Khodayari, 2011). There have been numerous ways that service quality has been examined in the education system. To complicate the difficulties of implementing customer satisfaction, higher education has unique characteristics of defining a customer, and the term "customer" has been a challenge to define in higher education (Michael, Sower, & Motwani, 1997). Customer relationship management (CRM) has been an approach used to ensure that all customers receive a high level of service. In higher education, colleges can use CRM to consider students as customers, thereby positively influencing higher retention rates (Seeman & O'Hara, 2006). Total Quality Management (TQM) is an approach which has led to service quality strategies for customer satisfaction, and research has been conducted using customer satisfaction as a measure (Klaus & Maklan, 2013). Unfortunately, there are many issues affecting higher education administrators in order to maximize customer satisfaction. Technology administrators typically have challenges which include funding technology replacements and upgrades, providing 24 hour-per-day access to information, training faculty, and securing new technology funding (Johnson, 2001). Technology managers are also challenged to provide needed technology support, and the issues of responsibility in this area are not always clear (Johnson, 2001). Customer satisfaction can be achieved by understanding the different business concepts and business research that exists in the current environment. A Director of Strategic Development wrote that those responsible need "to acknowledge that American colleges and universities don't behave like businesses…but should!" (Reisman, 2005, p. 63). The challenge is to better understand

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the issues around customer satisfaction and how organizations can effectively implement proper customer satisfaction strategies cost effectively.

Customer Satisfaction and Generational Differences

Paniale (2013) examined K-12 teachers to determine if there were generational differences due to "job satisfaction, organizational commitment, and work motivation" (p. 4) and to determine whether any differences impacted student performance. Paniale used four generations determined by birth year of "traditionalists" (born 1922-1943), "baby boomers" (born 1944-1960), "generation X" (born 1961-1980), and "millennials" (born 1981-2000) (Paniale, 2013, pp. 6-7). Paniale suggested that maintaining a profession at their school was more significant to baby boomers than millennials. Paniale also suggested that the benefits were more vital to baby boomers than millennials. Millennials have strong needs of being able to communicate and multitask (Robinson & Stubberud, 2012). Managers of millennials need to understand these desires and expectations of communicating and multitasking to allow employees to maximize their productivity and their employee satisfaction (Robinson & Stubberud, 2012). Overall, Paniale found a statistically significant difference in job satisfaction among four generations and a statistically significant difference in organizational commitment based on employees' careers at their present school.

In order to improve customer satisfaction, acceptance of new technological solutions may be helpful. Wang, Rau, and Salvendy (2011) examined which factors affect older adults' acceptance of technology, which factors are most important, and the

relationship between the factors and their objective of using information technology. Wang et al. found that almost 94% of adults age 60 to 75 indicated that they used a computer. There were four factors for older adults that represented about 63% of the overall variance of accepting technology, including "needs satisfaction, public acceptance, perceived usability, and support availability" (Wang et al., 2011, pp. 1091-1092). Wang et al. also found the two most important factors for prompting older adults to use information technology were needs satisfaction and public acceptance.

The generations have different traits as consumers when making purchases. Older generations such as traditionalists and baby boomers might need extra reassurance with technology related issues (Nicholas, 2009). Younger adults were much more interested than older adults in using current technology such as cell phones to find more information about a product (Burke, 2002). Older adults preferred the more routine process of checking out and paying for products to an actual person in making a purchase, but younger adults were more eager to try self-checkout methods of purchasing (Burke, 2002). Generational differences showed younger adults prefer that retailers make it easier for them to find items themselves and prefer to avoid having the pressure of a salesperson (Burke, 2002).

<u>Customer Satisfaction and Training Strategies</u>

"The failures of and difficulties encountered in so many K12 technology implementations have taught us that teachers need support in order to use educational technology in the classroom" (Dexter, Anderson, & Ronnkvist, 2002, p. 2). Dexter et al.,

using a CEO Forum 1999 report, examined the four components of a positive technology program. The four components were (a) teachers integrating technology in the classroom rather than just using technology, (b) having learning experiences through either group training, individual training, and training when needed on demand, (c) technology that is easily accessible, and (d) high participation of the group (Dexter et al., 2002). It was found that when technology support was developed with the teacher's instructional requirements as a focus and was based on the four components, teachers were more likely to use the equipment appropriately and more often in their classroom (Dexter et al., 2002). This finding means technology managers must plan for customer support that allows for professional development and learning approaches that work best for teachers (Dexter et al., 2002).

Lee et al. (2009) found successful training must include interaction at the different stages of the training process. Prior to training there must be the "ability/decisions to participate," while training is occurring there must be "involvement in training activities," and after training there should be "training performance and subsequent transfer to work activities" (Lee et al., 2009, p. 18). The way adults learn has had significant analysis from many different perspectives. Learning can be examined from many different angles, including "sociocultural learning, reflection, metacognition, prior experience, authentic experience, and generative learning strategies" (Dobrovolny, 2006, p. 156). Those providing computer based learning need to understand these learning theories in order to be effective. For example, the process of learning does not just occur with users learning by themselves, but rather by also communicating with others. This is

known as sociocultural learning, and this method can be incorporated into technical

training. Dobrovolny (2006) observed that when using technology-based training, there

must be metacognition where users can monitor what they have learned from the

beginning and continually through the process. This can be accomplished by self-

assessment and also correcting information. The process of two-way communication

occurring in the classroom is just as important as training even if it is between a computer

and the user (Dobrovolny, 2006). The customer satisfaction in a training class is more

likely to occur if the appropriate training strategies were used and understood and

customer needs were considered.

The usual method of technology training has not been effective according to some

researchers. There are "shortcomings and flaws associated with technology training

sessions that limit the transition and application of skills learned in those sessions to

classroom setting and work environment" (Okojie, Olinzock, Adams, & Okojie-Boulder,

2008, p. 261). Teachers need to be involved and state what they need to be more

effective in the schools. Unfortunately, school administrators often decide what is

needed for in-service technology training without discussing training with teachers

(Okojie et al., 2008). Computer training tends to pressure some individuals being trained

in a situation where training was ineffective. For example, the trainee may not be able to

keep up with the training level, get one-on-one help when needed, or may just give up. In

order for training to be effective, there should be an assistant in the room who can assist

the users who might need occasional one-on-one assistance. The training sessions should

be comfortable and allow users to discuss the concepts being learned as part of a group

(Okojie et al., 2008). The trainer should create an environment that allows for the trainee to learn. Okojie et al. determined that a successful training includes having the information taught be appropriate for the training objectives, having the methods used match the training objectives, and including diversity in training to allow participants to use a preferred learning style. Learning is not an easy process, and having an effective strategy is required for success (Okojie et al., 2008).

Information and communication technologies (ICT) has a big impact on training (Davis et al., 2009). An "organic design" was compared to computer-based training (CBT) to determine which method was better for training (Davis et al., 2009, p. 864). CBT was "problematic in education" and it should not be used when the teacher has limited ICT skills and little self-assurance with computers (Davis et al., 2009, p. 876). Most training has typically been done using a left-brain approach which involves analytical and sequential methods versus the right brain which does more visual methods (Lyons & Mattare, 2011). Montessori developed a learning approach that used visual training such as looking at two colors with minor differences and finding the exact colors from a chart (Lyons & Mattare, 2011). Incorporating right-brain training could enhance the training session (Lyons & Mattare, 2011). There are a variety of approaches to successful training which can lead employees to become more knowledgeable and ultimately provide greater customer satisfaction due to effective training.

Customer service training was related to employee commitment which suggested that an employee's perception of interest by their organization in their advancement may lead to more commitment in their dedication to work (Johnson, 2011). Training is

challenging to be effective and can have a significant impact on customer satisfaction.

There are other aspects of being able to train including understanding how websites can

improve the learning process (Kraky, 2012). An action research project at Keystone

College was conducted to examine how to build support for users by having a website

that allows many questions to be answered on-line (Kraky, 2012). The support

mechanism needed to be customer service-friendly so that the faculty would have a high

level of customer satisfaction. This particular research showed that those who attended

optional in-person training seminars for Blackboard training sessions were more likely to

go to a website to do training than those who did not attend the training session (Kraky,

2012). It is evident that the complexities of appropriate training are substantial and do

have an impact on customer satisfaction.

<div align="center">Customer Satisfaction and Technology</div>

Customer satisfaction involves many areas including new technology

implementations. There should be the implementation of an appropriate organizational

culture, an effective hiring process for selecting the right people, and appropriate training

prior, during, and after the new technology was implemented (Hage & Neal, 2003).

Froehle (2006) found that interacting with customers was different with in-person

interactions versus technology interactions such as phone, email and online chat. Froehle

examined six characteristics of the customer service representative (CSR), including

"courtesy, professionalism, attentiveness, knowledgeableness, preparedness, and

thoroughness" (p. 14) to see how they correlated to customer satisfaction when using

chat, e-mail, and the telephone. The results showed that "thoroughness, knowledgeableness, and preparedness" (Froehle, 2006, p. 24) were important in all three types of encounters involving technology media, and thoroughness had the greatest effect of any characteristic. These three characteristics that were important for customer service representatives are known as task-oriented characteristics. The other three characteristics, namely courtesy, professionalism, and attentiveness, are relationship-building characteristics. The study found that task-oriented activities can be effective in an environment that uses technology media by a customer service representative (Froehle, 2006).

Technology-based encounters have become increasingly popular, including using ATMs instead of a teller at a bank or paying for gasoline at the pump instead of paying an attendant (Meuter el al., 2000). Meuter et al. found that technologies that were self-service were associated with both positive and negative satisfaction. The positive satisfactions showed that using these types of services may exceed interpersonal physically present types of meetings and have mechanisms to predict and avert failure of the technology (Meuter et al., 2000). The dissatisfaction of the self-service technologies occurs when not handling a failure in the technology in a timely manner, and not reacting to customer requirements (Meuter et al., 2000). The greatest dissatisfaction occurs when customers are not able to use the self-service technology (Meuter et al., 2000). It is evident that self-service technologies, when implemented effectively, can lead to higher customer satisfaction levels, but there are challenges to making it occur successfully.

Customer Service in Education

Customer service policies frequently exist at the district level in K-12 school systems throughout the United States. San Jose Unified School District adopted a customer service resolution that stated "We believe in being responsible for providing meaningful feedback to our students, staff and parents, reinforcing the high quality of services we provide, acknowledging a sense of urgency about the quality of our customer service, valuing our customers and demonstrating respectful behavior…" (San Jose Unified School District, 2013). The Philadelphia school reform commission adopted a policy in 2011 that "constituent services are provided through well-defined protocols that facilitate the ability of the district to resolve problems effectively and identify opportunities for systems improvement" (School District of Philadelphia, 2011). Specifically, the school reform in Philadelphia included the following statement: "[The] district has well defined points of access for constituents, creates a culture of customer service, and responds to constituent requests" (School District of Philadelphia, 2011).

Anchorage School District developed a customer service guide that specifically defined tips that include "friendliness, understanding and empathy, fairness, control, and information and communication" with strategies for each component (Anchorage School District, n.d., p. 2). The guide included tips such as "clearly marked visitor parking spaces near the front door" and "grounds free of trash and debris" (Anchorage School District, n.d., p. 6). The guide included a page with the phrase "Do you have them at hello?" where employees can learn to maximize customer service skills (Anchorage School District, n.d., p. 15).

The Florida Department of Education has words in their mission that infer customer service is important. Their mission is to

> increase the proficiency of all students within one seamless, efficient system, by providing them with the opportunity to expand their knowledge and skills through learning opportunities and research valued by students, parents, and communities, and to maintain an accountability system that measures student progress toward the following goals: highest student achievement, seamless articulation and maximum access, skilled workforce and economic development, and quality efficient services. (Florida Department of Education, 2013)

The Florida State Board of Education mission includes "quality efficient services" (Florida Department of Education [FDOE], 2013, para. 1) showing that quality service is one component the Florida Department of Education is striving to achieve. There also exists a Florida Department of Education Code of Personal Responsibility. In a personal email communication in Spring, 2013, FDOE Press Secretary, Cheryl Etters, shared the following elements of the code:

- Employees shall be courteous, considerate, respectful, and prompt in dealing with and serving the public, interacting with co-workers, and operating vehicles on state business.
- Employees shall not engage in offensive, profane, abusive, threatening, or disruptive language or conduct.
- Employees shall maintain high standards of honesty, integrity, and impartiality.
- Employees shall place the interests of the public ahead of personal interests.
- Employees shall not use, or attempt to use, their official position for personal gain or use confidential information for personal advantage.
- Employees shall refrain from conduct which, though not illegal or inappropriate for a state employee generally, is inappropriate for a person in the employee's particular position. (C. Etters, personal email communication, January 25, 2013)

There are many school boards that have created customer service policies in their districts. For example, the School Board of Lee County in 2007 adopted statutory authority 1001.41, 1001.42 and 1001.43 which stated:

The School Board of Lee County believes that periodic surveys are vital in assessing the degree to which the stakeholders of the Lee County School District are satisfied with the services and responsiveness of the District. In March of each year, the School Board shall review the plan for gathering and communicating the data and the results of surveys. The School Board shall review the results of the surveys in June. (School Board of Lee County, 2007)

Districts have also increasingly printed customer service literature and encouraged customer service. Orange County Public Schools (OCPS) in Florida has written a brochure, *Guide to Better Communication: Providing Stellar Customer Service* (n.d.) that describes customer service policies for the school district. There are expectations that include procedures for answering the phone, responding to voice mail, respect, email, callers who speak another language and courteous customer service strategies. Customer service includes electronic communication, and the OCPS guide specifically states expectations on email and indicates that email should not be used for confidential information. For email, it even suggests taking a proactive approach and trying to "pre-empt further questions" (*Guide to better communication*, n.d., p. 15). Technology communication has also become much more common and customer service involves the same types of issues whether in person, on the phone, or through e-mail. The OCPS guide defines specific guidelines including how long it should take to respond to an email.

There are districts that are recognizing faculty and staff who show the highest quality of customer service. For example, the website of the School District of Osceola County in Florida states that "The Osceola School Board is committed to providing the highest level of quality customer service - one stakeholder at a time" with a place to submit for recognizing individuals (School District of Osceola County, 2012, p. 1).

A strategy for successful customer satisfaction is to instill a customer service approach into administrators, teachers, and staff. The solution is to train staff on how to treat customers better than they expect to be treated. The six steps are "customer-focused culture," "hire and cultivate the right people," "instill accountability and appreciation," "build a customer service reputation," "practice makes permanent" and "keeping tech in check" (Kusch, 2011, pp. 62-64). The first step to build a culture in a school involves responding internally to the co-workers effectively as well as responding to external customers. The second step is not only to hire the right people but also to develop their skills and make them aware of any concern on an on-going basis. The third step requires employees to be accountable for their actions. The fourth step involves building the reputation and consistency that all customers will be treated with the same high concern for their business. The fifth step is to ensure that the culture is practiced so that no customers are lost and so that ultimately the improved reputation permits a gain in customers. The final step involves using technology when it makes it easier for the customer versus when it makes it easier for the school. In many businesses, the voice prompts of automated systems become annoying to a customer. Ultimately, it might be best to limit the number of voice prompts or have a person answer the phone (Kusch, 2011, pp. 62-64).

Chambers (1998) described a simple approach requiring a school to understand its "attitude, behavior and communication" (p. 33) so the environment is friendly to all customers. Attitude involves showing that one cares about handling the request of the customer. For those who do not properly show they care and help the customer, the end

result will be a negative experience. A motto showing that the school has caring

employees is important. Behavior is not only about what is done to help the customer but

also how the situation is actually handled. It is important to have a positive first

impression when someone contacts a school. For example, answering a phone call on the

fifth ring and then asking the person to hold does not lead to an initial positive response.

It is important to have courtesy in achieving customer service, and this involves being

"polite, helpful, and considerate" (Chambers, 1998, p. 35). Communication involves

having an appropriate environment when parents or students gain their first impressions

of the school. This could be the signage at the school or on the grounds of entry areas of

the building when they arrive. Effective communication also involves listening to and

understanding the customer so the service requested can be provided (Chambers, 1998).

There is evidence that school districts are implementing successful customer

service strategies that do have an impact by incorporating positions that focus on

customer service. On September 22, 2011, Prince George's County Public Schools

announced the creation of a new office of Constituent Services. The office handles any

conflicts or issues that need to be addressed and provides appropriate training or staff

development when needed (Prince George's County Public Schools, 2011). Customer

service has become much more important with the changes that have occurred in

education over the years.

Total Quality Management in Education

Service quality originated from Total Quality Management (TQM) concepts.

TQM emphasized the way a service was provided rather than assessing the level of worth

perceived by the customer (Klaus & Maklan, 2013). TQM has been defined as "a

management approach and philosophy that involves a commitment from all levels of

employees to continually strive to make improvements and satisfy customers" (Hitt,

Black, & Porter, 2012, p. 363). TQM has become the backbone of manufacturing, and

many companies have incorporated the principles of TQM into their operations (Michael

et al., 1997). In 1988, with the formation of the European Foundation of Quality

Management, the term TQM focused on total customer satisfaction (Sahney, Banwet &

Karunes, 2004a). In the 1990s, education programs understood the value of quality and

began to implement TQM in a variety of ways (Michael et al., 1997). TQM can be used

in education, but it must be altered because the product is not as visible as in the

manufacturing industry and there are many customers being handled in the process

(Michael et al., 1997). In the 1990s, there were six TQM models according to one TQM

research company. These included: (a) the TQM element approach, (b) guru approach,

(c) Japanese model approach, (d) industrial model approach, (e) Hoshin planning

approach, and (f) Baldrige Award criteria approach (Michael et al., 1997). TQM can be

examined from the perspective of three stakeholders: employees, customers, and funders

(Owlia & Aspinwall, 1997). Sahney, Banwet, and Karunes (2004b) observed that the

focus on quality has been clearly obvious in most educational improvements that have

occurred in many countries.

There is a challenge in higher education in filling the gaps that exist in customer service; however, TQM can be an effective approach to meet this challenge. The strategy involves a comprehensive approach that includes the faculty, staff, and all other stakeholders in developing suitable teaching methods, effective procedures, and an appropriate organizational culture (Vazzana, Winter, & Waner, 1997). The process is a long-term pledge to a community that is focused on quality in both teaching and learning in the higher education institution (Vazzana et al., 1997). There must be a vision, a quality focus based on the customer, and a team approach. Understanding and fine-tuning processes, training, using surveys to gather feedback, strategizing to remove the likelihood of gaps occurring in the learning process, empowerment, and strong leadership are all essential to successful TQM initiatives (Vazzana et al., 1997). Total Quality Management in education can be effective if supported by the leaders and implemented effectively. Elmuti et al. (1996) found TQM was valuable when implemented in most higher education institutions. About one-third of the TQM programs implemented did not reach their original objectives and when bringing TQM into higher education there requires a change in the relationship between people and their jobs (Elmuti et al., 1996). All stakeholders must be accommodating to the new philosophy in order for TQM to be successful in higher education (Elmuti, Kathawala, & Manippall, 1996).

Ang, Davies, and Finlay (1999) stated that there was little research prior to their study on the relationship between quality management and information technology. Ang et al. examined the impact of information technology on quality management processes and developed quality management supported by information technology (QMSIT). The

eight dimensions of QMSIT are "leadership," "strategic planning process," "output quality assurance," "important innovations," "information and analysis," "human resource utili[z]ation," "customer satisfaction," and "quality results" (Ang et al.,1999, p. 46). Many of the dimensions have specific attributes that help determine the dimension. For example, customer satisfaction has "customer requirement determination," "customer satisfaction evaluation," and "relationship management" (Ang et al., 1999, p. 46). Ang et al. found, in their study, a key relationship between quality management and information technology.

Chang and Shen (1997) developed a framework with which TQM can be used in the process of handling End User Computing (EUC). TQM requires continuous improvement which was an important aspect of being successful in EUC (Chang & Shen, 1997). TQM principles such as top management devotion to EUC and employee participation in computing are necessary to be successful (Chang & Shen, 1997). EUC must be developed where employee empowerment grows to lead to a more effective organization (Chang & Shen, 1997). TQM does affect customer satisfaction, and the earlier that TQM is implemented the more satisfied are customers (Tanninen et al., 2010).

Sakthivel, Rajendran, and Raju (2005) examined the relationship of the implementation of TQM and students' satisfaction with their academic performance. In the study, Sakthivel et al. considered five TQM variables: "commitment of top management," "course delivery," "campus facilities," "courtesy," and "customer feedback and improvement" (pp. 576-577). There were no significant differences based on gender and the size of the institution (Sakthivel et al., 2005). There was, however, a

critical importance of top management support necessary for TQM to be successful (Sakthivel et al., 2005). In addition, Sakthivel et al. (2005) found if both "top management" support and "campus facilities" (p. 858) were both enhanced, there was an improvement in the other three factors. It was evident there was a relationship between the implementation of TQM and students' satisfaction with their academic performance (Sakthivel et al., 2005).

<div align="center">Measuring Customer Satisfaction</div>

The question arises as to how customer satisfaction is measured in educational organizations. One of the biggest challenges for colleges and universities is to manage for quality (Sahney et al., 2004b). Aldridge & Rowley (1998) examined Edge Hill University College in England to determine customer satisfaction and suggested a "negative quality" (p. 197) model. Their theoretical model focuses on responding to a dissatisfaction when it occurs and stopping the future dissatisfaction (Aldridge & Rowley, 1998). Customer satisfaction has been analyzed in understanding how loyal customers are to their product or service. Hoyt & Howell (2011) analyzed customer loyalty in continuing education programs and found that keeping satisfaction levels high was the strongest predictor of customers returning for future business.

Johnston and Kong (2011) observed that service quality can be identified from either an operational or customer perspective. "Customer perceived quality is the customer's judgment of the quality of the service" (p. 5) which relates to the experiences and feelings customers have as to how they will benefit from the service. These

researchers developed an approach to help businesses methodically plan customer experiences, including the change process. Some of the steps in their eight-stage approach included (a) having objectives, (b) customer research, (c) defining how the service should occur, and (d) appropriately handling the change process (Johnston & Kong, 2011).

Klaus and Maklan (2012) developed a model known as customer experience quality (EXQ) which has four dimensions: "product experience, outcome focus, moments-of-truth, and peace-of-mind" (p. 231). The construct reliability of all four of these factors ranged from 0.75 to 0.81 (Klaus & Maklan, 2012). EXQ can be used by managers to benchmark and measure how well the customer service experience has occurred over time (Klaus & Maklan, 2012). EXQ allows a manager to determine which parts of the customer service experience are most positively associated with marketing and allows the manager to determine the cost benefit of spending money on the service experience to the organization's income (Klaus & Maklan, 2012). The model can be helpful to organizations that have "high-involvement, high-impact services" (p. 24). In their study, Klaus and Maklan (2013) determined all four of the dimensions had both a positive and important influence on strategic marketing results. They found customer experience was more correlated with loyalty than customer satisfaction was correlated with loyalty.

SERVQUAL--Measuring Service Quality

SERVQUAL is a 22-item instrument used to determine how customers perceive

the quality of service they receive. The SERVQUAL model was developed in the 1980s

by three university researchers, Parasuraman, Zeithaml, and Berry. Parasuraman et al.

(1988) indicated that a proper method for determining how well a company is doing was

to "measure consumers' perceptions of quality" (p. 13). SERVQUAL began originally as

a 97-item instrument that permitted the examination of pooled data from five different

surveyed service areas (Parasuraman et al., 1988). The instrument was reduced to 54

items and then to 34 items with seven dimensions (Parasuraman et al., 1988). The final

instrument contained 22 items encompassing five dimensions (Parasuraman et al., 1988).

Each of the five dimensions had four or five items that corresponded to a specific

dimension (Parasuraman et al., 1991a).

The SERVQUAL model was developed after extensive research in an exploratory

study that included interviews with 12 customer focus groups, each of which contained

three groups for each of four sectors including "retail banking, credit cards, securities

brokerage, and product repair and maintenance" (Zeithaml et al., 1990, pp. 16-17). The

study used 8 to12 participants in each group who had used the service one or more times

in the past three months (Zeithaml et al., 1990). Eight of the 12 groups were in the

southwestern United States, and the remaining were in other areas of the U.S. (Zeithaml

et al., 1990). The focus groups unequivocally believed service quality requires one to

meet or exceed what is expected (Zeithaml et al., 1990). There were four factors that

determined the difference between what group members expected and their perception of

what occurred. These were: (a) what the participants had heard from other customers, (b) their personal desires, (c) prior experience with use of the service, and (d) communications from the company through ads, commercials, pamphlets, etc. (Zeithaml et al. 1990).

Zeithaml et al. (1990) identified 10 dimensions that determined the service quality. These ten dimensions were "tangibles, reliability, responsiveness, competence, courtesy, creditability, security, access, communication, and understanding the customer" (Zeithaml et al., 1990, p. 20). The exploratory study revealed service quality can be defined as "the discrepancy between customers' expectations and perceptions" (Zeithaml et al., 1990, p. 20). Ultimately, the 10 dimensions were reduced to five. As shown in Table 1, three of the dimensions (tangibles, reliability, and responsiveness) remained the same, and two new dimensions encompassing the remaining seven original dimensions were added (Zeithaml et al., 1990). The two new dimensions were (a) assurance comprised of competence, courtesy, credibility, and security; and (b) empathy which was access, communication, and understanding the customer (Zeithaml et al., 1990).

The objective of the SERVQUAL model was to compare the expectation for the dimension to participants' perceptions, identifying any observed gaps. Two surveys were administered, one measuring expectations and another measuring perceptions, leading to two scores that could be compared. In the SERVQUAL model, if the perception score was lower than the expectation score, a service quality underperformance was determined to exist (Zeithaml et al., 1990).

Table 1

The Original 10 Dimensions of Service Quality and Corresponding SERVQUAL Dimensions

Original Dimension	Corresponding SERVQUAL Dimension
Tangibles	Tangibles
Reliability	Reliability
Responsiveness	Responsiveness
Competence	Assurance
Courtesy	Assurance
Credibility	Assurance
Security	Assurance
Access	Empathy
Communication	Empathy
Understanding the Customer	Empathy

Note. Source of SERVQUAL dimensions was Zeithaml et al., 1990, p. 25.

The SERVQUAL model has been used to help understand customers' expectations about the service being provided and their perceptions about what actually occurred in the service they received. This gap or difference between expectations and the perceptions determine the satisfaction level. Zeithaml et al. (1990) referred to four gaps that determine the fifth gap, the difference between the customer expectation and the customer perception of the service. The first gap is the difference between the customer's expectation and what management believed the customer expected. The second gap is what management specified for the delivery of the service. The third gap is the difference between what management specified for the delivery of the service and the actual delivery of the service. The fourth gap is the difference between what was promised and what was actually delivered. The combination of these four gaps led to the

fifth gap of understanding the difference between the customer expectation of the service and the perception of the actual service (Zeithaml et al., 1990).

Thus, the SERVQUAL model is comprised of five wide-ranging service dimensions that measure the customer's service quality. The five service dimensions are defined in Table 2. Higher percentages indicate more importance to the consumer (Berry, Parasuraman, & Zeithaml, 1994). Though the actual percentages of each dimension may have varied in the different industries that were examined in the research, they were very similar in the different industries that were originally surveyed (Parasuraman, Berry, & Zeithaml, 1991a). Reliability which is "the ability to perform the promised service dependably and accurately" is considered the most important (Berry et al., 1994, p. 33).

Two of SERVQUAL dimensions, assurance and empathy, originally consisted of three or four dimensions when the service quality model had 10 dimensions. Assurance consisted of competence, courtesy, credibility, and security (Zeithaml et al., 1990). Competence is the "possession of the required skills and knowledge to perform the service" (p. 21). Courtesy is the "politeness, respect, consideration, and friendliness of contact personnel" (p. 21). Credibility is the "trustworthy, believability, honesty of the service provider" (p. 22). Finally, security is the "freedom from danger, risk or doubt" (p. 22).

Table 2

SERVQUAL: Five Dimensions and Their Definitions

Dimensions	Importance Percentage	Definitions
Reliability	32%	"The ability to perform the promised service dependably and accurately"
Responsiveness	22%	"The willingness to help customers and provide prompt service"
Assurance	19%	"The knowledge and courtesy of employees and their ability to convey trust and confidence"
Empathy	16%	"The caring, individualized attention provided to customers"
Tangibles	11%	"The appearance of physical facilities, equipment, personnel, and communication materials"

Source. Berry et al., 1994, p. 33.

The SERVQUAL dimension empathy originally consisted of three dimensions which were access, communication, and understanding the customer (Zeithaml et al., 1990). Access is the "approachability and ease of contact" (p. 22). Communication is "keeping customers informed in language they can understand and listening to them" (p. 22). The last original dimension of assurance is understanding the customer which is "making the effort to know customers and their needs" (p. 22).

During the research on SERVQUAL there were lessons learned including "listening," "reliability," "basic service," "service design," "recovery," "surprising customers," "fair play," "teamwork," "employee research," and "servant leadership" (Berry et al., 1994, pp. 32-42). These researchers showed that service performance had

not been successful due to the following: (a) not having appropriate teamwork, (b) the company's lacking an easy way for the customer to recover from a negative issue, and (c) not using information from employees as a proactive method to prevent future problems (Berry et al., 1994). Servant leadership is an approach that is necessary to provide outstanding service quality and can be achieved when leaders coach their employees, provide them with tools to perform their jobs effectively, and enable them to serve customers effectively (Berry et al., 1994). Service design is creating a system where the service process can occur effectively over time by altering the intangible procedures into a system that is more perceptible to the organization (Berry et al., 1994). There are many challenges in making service quality work, but researchers have shown many fundamental strategies that should make the process more successful.

Parasuraman, Berry & Zeithaml (1991b) found a zone of tolerance (ZOT) between the desired and adequate customer service levels, determining that it was important that what a company promised should actually be delivered. The ZOT model can help managers better understand the relationship "between perceived quality and customer satisfaction" (Teas & DeCarlo, 2004, p. 282). Consumers who do not have positive relationships with businesses are regularly unhappy (Parasuraman et al., 1991b). The positive types of relationships occur over time when the service is reasonable, responsive, genuine, and tailored to the consumer (Parasuraman et al., 1991b). When service levels do not meet expectations the first time on a service, customer expectations for the service to resolve the issue typically become higher (Parasuraman et al., 1991b). The challenge is for companies to honor their promises and deliver the service that was

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expected rather than promising an ideal outcome for the service (Parasuraman et al., 1991b). Companies that are considered the most favored by consumers are ones without current service issues with the company (Berry et al., 1994). Companies must be reliable to be competitive in the marketplace, but should effectively understand the process of service delivery to be a leader in their field (Parasuraman et al., 1991b).

The SERVQUAL model has been used to measure customer service quality since the 1980s and has been used by a variety of researchers in their analysis (Akhlaghi et al., 2012; Arena et al., 2010; Badri, Abdulla, & Al-Madani., 2005; Chatterjee et al., 2009; Hughey, Chawla, & Khan, 2003; Smith, Smith, & Clarke, 2007). The SERVQUAL model has been used throughout the world in many countries including India, Iran, Italy, United Arab Emirates, the United Kingdom, and the United States. SERVQUAL has become very popular and has had many varied applications (Khodayari & Khodayari, 2011). In higher education, most of the studies have been focused on students' perspectives rather than the views of faculty and staff (Khodayari & Khodayari, 2011). The SERVQUAL model, with its varied dimensions, has been used successfully in higher education to measure the gap between students' perceptions of quality and their expectations (Khodayari & Khodayari, 2011).

As has been noted, SERVQUAL has been used, specifically in information services departments, to better understand the five gaps between user satisfaction and service quality. Watson, Pitt, Cunningham and Nel (1993) stated the five gaps of information services departments are (a) "not understanding what users expect," (b) "setting the wrong IS service standards," (c) "the service performance gap," (d) "service

quality and communication by the IS department," and (e) "the user's gap" (pp. 260-263).

The first gap encompasses an inadequate understanding of the needs of the user,

unsuccessful communication, and a complex hierarchy. The complex hierarchy does not

allow employees to have contact with higher level managers to make them aware of

issues. The second gap involves the lack of standards for tasks and absence of goal

setting. The third gap involves not having the right person in the technology position,

inappropriate teamwork, and the lack of empowerment for employees to be successful

with users. The fourth gap is the lack of delivering service and overpromising issues that

are not achieved. These four gaps eventually become a fifth gap where users expect more

from the technology department than what they believe has been delivered (Watson et al.,

1993).

SERVQUAL has been successfully used to measure classroom experience in

higher education (Stodnick & Rogers, 2008). Stodnick and Rogers analyzed this issue

from many different perspectives, including student satisfaction with the course, student

satisfaction with the instructor, and student perception of learning. They found, for both

student course satisfaction and student satisfaction with instructor, that empathy,

reliability, and assurance were positively related to student satisfaction and that the other

two dimensions of responsiveness and tangibles were not found to be significant.

Stodnick & Rogers observed that SERVQUAL allowed instructors to focus on behavioral

traits that would be helpful for them to improve rather than changes needed on a handout

or an examination.

Badri et al. (2005) examined how the SERVQUAL model worked in information technology (IT) services in the three government higher education institutions in the United Arab Emirates. These researchers were not able to confirm the SERVQUAL model's five main dimensions in their study. They found that though the model may allow for comparisons in the same industry, it should not be used as a measure between different industries. They did determine that SERVQUAL was a valuable measure of information technology service quality in higher education, and SERVQUAL may be used to best advantage if modified depending on the environment. Badri et al., in their study of IT services in the three governmental higher education institutions, found that two of the five SERVQUAL dimensions, empathy and tangibles, were the least important.

Chatterjee et al. (2009) used SERVQUAL in India to identify gaps, to determine if student ratings were reliable in predicting teacher effectiveness, and to determine if SERVQUAL could help improve the success of a teacher. Chatterjee et al. believed SERVQUAL "might be used to quantify the gaps and importance of the parameters" (p. 1107) so that teachers can get a priority of what is needed to improve their teaching ability. Arena et al. (2010) analyzed customer satisfaction in higher education in Italy and used a modified version of SERVQUAL that was focused on central administrative services. Arena et al. searched for appropriate attributes based on the information provided by 18 universities, arriving at 12 items. Arena et al. used the 12 service attributes to determine which items were causing the most problems and consequently advising universities to focus on these areas. These four areas were "personnel

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competencies," "personnel courtesy," "time taken to deal with cases," and "appropriateness of opening hours" (p. 954).

Hughey et al. (2003) used SERVQUAL to measure services provided to students using the Angelo State University computer laboratories. Surveys conducted in both 1999 and 2001 yielded similar results showing that SERVQUAL could be used to measure the service quality in a university computer laboratory. The study also indicated that by understanding SERVQUAL results, service quality could be advanced and customer satisfaction levels could be preserved or improved. The researchers found that females were more concerned with service and reliability than males, and freshman and sophomores needed more help and attention than juniors and seniors (Hughey et al., 2003).

Akhlaghi et al. (2012) used SERVQUAL to determine the quality of educational services in both technical and vocational colleges in Iran. They found that the most important of the five main dimensions of SERVQUAL were responsiveness and assurance. They determined there was a gap in each of the five dimensions where the expectation of the dimension was more than the perception and that the five dimensions did not have the same weight. The rank order was responsiveness (26.86%), assurance (25.21%), empathy (17.78%), tangibles (17.34%), and reliability (12.81%) (Akhlaghi et al., 2012, p. 5288). Akhlaghi et al. also found that the percentages of each dimension were different for students in technical and vocational colleges. Akhlaghi et al. concluded that using the five dimensions of SERVQUAL could be an effective way to measure service quality at technical and vocational colleges in Iran.

Froehle (2006) noted that some of the six dimensions used in measuring the quality of service delivered by customer service representatives are very similar to some of the key dimensions in SERVQUAL. Udo et al. (2011) used a modified version of SERVQUAL to determine the quality of an e-learning experience. Their modified version was used by Stodnick and Rogers (2008) and was adjusted for a learning situation (Udo et al., 2011). Udo et al., in their model, used four of the five dimensions from SERVQUAL, replacing tangibles with "website content" (p. 1274). Udo et al. found that assurance, empathy, responsiveness, and website content had a strong impact on learning quality, but reliability had only a very small, insignificant impact.

Smith et al. (2007) completed an analysis of information technology (IT) service quality in universities in the United Kingdom to determine if the SERVQUAL dimensions applied in IT service at a university. Their sample consisted of 314 students and 152 staff from a United Kingdom university (Smith et al., 2007). The students' perception scores were lower than the expectation scores in all five dimensions (Smith et al., 2007). Reliability had the greatest gap and was the most important of five SERVQUAL dimensions for students (Smith et al., 2007). The second greatest gap was in responsiveness which was also the second most important dimension to the students (Smith et al., 2007). The staff survey reflected similar concerns in that the expectation scores were higher than the perception scores (Smith et al., 2007). Smith et al. did not find five unique dimensions as identified in SERVQUAL. They found that some dimensions, i.e., students' assurance and empathy, could be considered a single dimension (Smith et al., 2007). The researchers concluded that there was value in using

SERVQUAL even though there were differences in the IT service area. It offered a model that needed specific adjustments that were needed in the IT sector but also offered much insight in how the results could be used to improve service quality. For example, it showed reliability had the greatest gap for both students and staff and this provided a rationale for increased effort in this regard to improve customer satisfaction (Smith et al., 2007).

Ané Luis and Cláudia Márcia Ribeiro (2012) used multiple criteria decision aid (MCDA) methods including ELECTRE TRI, an outranking relation concept, and the Weighted Average method to determine the quality of information technology support provided by an educational institution in Brazil. Their research was partially based on the SERVQUAL model and dealt with the challenges of measuring information technology services (Ané Luis & Cláudia Márcia Ribeiro, 2012). Information technology services may be created and occur at the same time, e.g., helpdesks where the support exists and is used instantaneously (Ané Luis & Cláudia Márcia Ribeiro, 2012). A bad experience cannot always be circumvented, because in the case of a helpdesk situation, consumers may call and receive immediate service to meet their needs. The dimensions of quality in the study were tangibility, reliability, responsiveness, warranty, and empathy. The researchers found that there were several measures that should be handled proactively because they were considered to be critical. Some of these measures included when the service will be completed, the number of employees needed for rapid service, instant attention of the request, ability of a technician to handle the request, and knowledge of the technician to complete the request (Ané Luis & Cláudia Márcia

Ribeiro, 2012). The challenge is to understand and deal with the fact that people have

varied perceptions of the same item to be analyzed, even if the service was delivered

simultaneously to different users (Ané Luis & Cláudia Márcia Ribeiro, 2012).

<center>Critics and Alternatives to SERVQUAL</center>

There have been critics of the SERVQUAL model (Carman, 1990; Cronin &

Taylor, 1992; Cuthbert, 1996b; Teas, 1993). Cronin and Taylor (1992) examined two

objectives in stating why another model would be a better indicator of service quality

than SERVQUAL. The first objective was to show that the gap between expectations

and performance was not a great way to measure service quality. The second objective

was to look at the "causal order of the relationship between service quality and customer

satisfaction" (p. 56) and how both service quality and customer satisfaction affected

someone's intention of buying a product or service. They determined service quality was

a predecessor of consumer satisfaction, and that consumer satisfaction was a greater

factor than service quality when deciding what item to purchase. Cronin and Taylor

(1992) also found that services with high participation in the activity of the service, such

as the health field, had different ways of defining service quality than those with low

participation by workers such as dry cleaning. Ultimately, Cronin and Taylor (1992)

argued the challenge of using the model may not be effective from one industry to

another industry. Cronin and Taylor (1992) proposed another model called SERVPERF,

a "performance-based approach to the measurement of service quality" (Cronin & Taylor,

1992, p. 60). Cronin and Taylor (1994) stated there are challenges of using their model

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SERVPERF as well as SERVQUAL across different service industries. Cronin & Taylor (1994) argued that SERVPERF had a higher level of construct validity based on the literature at the time of their analysis. Finally, Cronin & Taylor (1994) believed that performance measures as used in SERVPERF are much better at demonstrating long-term service quality.

Teas (1993) disagreed with the performance minus the expectations approach of SERVQUAL due to how expectations were defined and the measurement validity of expectations. According to Teas (1993), it was not appropriate to conclude that performance above the expectation standard means that the consumer perceives higher quality has been received (Teas, 1993). In his study of the SERVQUAL model, Teas showed that SERVQUAL lacked discriminant validity associated with "attribute importance, classic attribute ideal-points, and performance forecasts" (Teas, 1993, p. 30). Teas (1993) proposed that a significant share of the variance of SERVQUAL might be associated with the respondent not understanding the question. He suggested it might be best to look at another concept, evaluated performance (EP), because it is difficult to understand the ideal expectation point and how it can be incorporated into perceived quality. A new EP approach was proposed in the critique as an alternative to the gap concept of the SERVQUAL model (Teas, 1993).

Parasuraman, Zeithaml, & Berry (1994) responded to some of the arguments made by Cronin & Taylor (1994) and by Teas (1993). Parasuraman et al. (1994) stated that they believed that customer satisfaction led to service quality, but Parasuraman et al. (1994) commented that Cronin & Taylor (1992) had stated the reverse in that greater

perceived service quality led to increased customer satisfaction (Parasuraman et al., 1994). Even though Cronin & Taylor (1992) argued for performance-based measures of service quality, Parasuraman et al. (1994) believed that including the expectations by the customer gave more valuable information than just examining the perception (Parasuraman et al., 1994). Parasuraman et al. (1994) expressed the belief that SERVQUAL allows for a better method of determining issues within a company because it could focus on where the company was not meeting the consumer's expectations. Parasuraman et al. (1994) disagreed with some of the arguments of Teas (1993), indicating that the analysis of expectations might not be as serious an issue as was discussed. However, disagreements between Parasuraman et al. (1994), Cronin and Taylor (1992) and Teas (1993) indicated that issues involving expectations and the relationship between perceived quality and customer satisfaction are important issues that need to be addressed (Teas, 1994).

Carman (1990) examined the SERVQUAL model to investigate the different dimensions' fit into different organizations. Many of the dimensions existed in their analysis, but Carman believed that some specific dimensions such as responsiveness and access should be expanded (Carman, 1990). Carman recognized challenges in measuring service quality when there were multiple service functions as in a hospital. Different areas in the same industry, banking as an example, also need to measure service quality separately, e.g., departments for mortgage loans, consumer loans, and tellers, because perceptions can be very different for each department. There are also challenges to administering a survey to effectively get accurate results when trying to measure

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perception and then measuring the experience. In a retail establishment, as one example, exact data regarding expectations would need to be obtained when the customers entered the store and revisited upon leaving the store regarding perceptions (Carman, 1990). To be most effective, specific items in the survey need to be focused based on each type of service (Carman, 1990).

There has been analysis performed on SERVQUAL that shows a number of different factors were revealed in measuring service quality (Buttle, 1996). Researchers have shown five factors can mainly determine service quality in the hotel industry, four factors can mainly determine service quality in retail clothing, three factors can mainly determine service quality when servicing cars, and one factor can show most of the variance when examining service quality of utility customers (Buttle, 1996). There are both theoretical and operations issues associated with SERVQUAL and there are issues associated with the construct validity when using SERVQUAL (Buttle, 1996). The operational challenge of having both an expectation test and a separate perception test could lead to misunderstanding by the participants (Buttle, 1996).

Carr (2007) used the concepts of the SERVQUAL model and proposed adding elements of fairness to measure service satisfaction, calling the model FAIRSERV. Carr (2007) suggested that there is a fairness component in how an individual was treated based on factors including not favoring one group over another, not being extra polite to one customer over another, etc. The combination of SERVQUAL dimensions and the four dimensions of fairness (distributive, procedural, informational, and interpersonal) could be a more effective way to measure service quality (Carr, 2007).

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There have been additional studies analyzing SERVQUAL. Klaus and Maklan (2013) developed their own model of customer satisfaction known as the customer experience quality (EXQ). EXQ takes a complete perception by the customer approach rather than a difference approach which examines the gap between what customers expected and what they received (Klaus & Maklan, 2013). Klaus and Maklan (2013) wrote that the EXQ measure unlike SERVQUAL "includes emotions and peer influences" (p. 228) and has a more direct relationship to the behavior of customers and success of the business. Jackson (2009) analyzed service quality provided by technology staff who were not centralized at a southern research university using SERVQUAL and found the SERVQUAL model had reliability and convergent validity but did not have nomological validity. This analysis partially supported the use of SERVQUAL for measuring service quality of non-centralized technology staff. In summary, SERVQUAL has been critiqued by a wide range of researchers, and some of the researchers have developed modified service quality models.

<div align="center">Besterfield et al. (2003) Service Quality Dimensions</div>

Besterfield et al. (2003) described service quality encompassing "organization," "customer care," "communication," "front-line people" and "leadership" (Besterfield et al., 2003, pp. 76-77). Organizations must communicate appropriate information to their staffs through training and meetings and provide explanations and descriptions of service quality standards (Besterfield et al., 2003). Besterfield et al. (2003) defined organization as being comprised of the following actions: "identify each market segment," "write

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down the requirements," "communicate the requirements," "organize processes," and "organize physical spaces" (p. 76). Customer care involves focusing on the customer, valuing the customer, and treating the customer with respect (Besterfield et al., 2003). It requires that staff must "meet the customer's expectations," "get the customer's point of view," "deliver what is promised," "make the customer feel valued," "respond to all complaints," "over-respond to the customer," and "provide a clean and comfortable customer reception area" (Besterfield et al., 2003, p. 76). Communication involves consistency with its service quality in making sure what customers expect is what happens, providing systems that are simple and quick to use, and listening to customers (Besterfield et al., 2003). Communication requires one to "optimize the trade-off between time and personal attention," "minimize the number of contact points," "provide pleasant, knowledgeable, and enthusiastic employees," and "write comments in customer-friendly language" (Besterfield et al., 2003, p. 76).

Front-line people are critical to the success of an organization, and the organization must "hire the best," "develop the best employees into professionals," and "motivate the employee to stay and excel" (Besterfield et al., 2003, p. 79). Front-line people need to be excellent employees so one must "hire people who like people," "challenge them to develop better methods," "give them the authority to solve the problem," "serve them as internal customers," "be sure they are adequately trained," and "recognize and reward performance" (Besterfield et al., 2003, p. 76). Leadership involves management dedication to service quality, and this includes requiring management to spend some time at a service desk to better understand what is needed to

be successful (Besterfield et al., 2003). Leaders should "lead by example," "listen to the

front-line people," and "strive for continuous process improvement" (Besterfield et al.,

2003, p. 77). According to Besterfield et al. (2003), these service quality dimensions are

critical elements in being successful in customer satisfaction.

Customer Satisfaction in Higher Education

Cuthbert (1996b) questioned whether SERVQUAL was appropriate in higher

education and discussed criticisms that exist with SERVQUAL. First, there has been

criticism as to whether it was more important to measure the gap between expectation

and perception or the accurate level of performance. Cuthbert (1996b) agreed that

measuring the gap was appropriate in higher education because it is important to quantify

the student experience. There has been criticism that the SERVQUAL model focuses on

the delivery of the service rather than the end results. Cuthbert (1996b) agreed with the

use of SERVQUAL in higher education settings, arguing that it is the process that is

critical rather than the final outcome and noting that the SERVQUAL model captures the

full student experience versus just looking at the teaching element (Cuthbert, 1996a).

Cuthbert (1996b) posited that the SERVQUAL five dimensions were not sufficiently

accurate in higher education because they are not reliably distinct. To address this

deficiency, he recommended revisiting the original 10 definitions so as to more clearly

express them as they relate to higher education.

Service quality models have been used to measure student satisfaction in higher

education (Gruber, Stefan Fuß, Voss, & Michaela Gläser-Zikuda, 2010; Sia &

Muthusamy, 2011). Gruber et al. (2010) developed 15 quality dimensions to measure student satisfaction levels in a German higher education institution and conducted a pilot and main study to confirm results. The 15 quality dimensions were:

administrative and student services, atmosphere among students, attractiveness of the surrounding city, computer equipment, courses, library, lecturers, lecture theatres, refectory/cafeteria, relevance of teaching to practice, reputation of the university, school placements, support from lecturers, the presentation of information, and university buildings (Gruber et al., 2010, p. 115).

Eight of the variables (support from lecturers, lecture theaters, courses, university buildings, the presentation of information, the reputation of the university, relevance of teaching to practice, and lecturers) had a Pearson correlation of at least 0.33 (Gruber et al., 2010, p. 115). Findings indicated that computer equipment had a Pearson correlation of only 0.21 in the main study (Gruber et al., 2010, p. 115).

Sia and Muthusamy (2011) used an instrument they developed based on SERVQUAL to identify quality attributes as either a "satisfier, critical, dissatisfier, and neutral" (p. 145) to better prioritize service quality issues in higher education. Their research was based on a private higher education institution in Malaysia. Sia and Muthusamy identified four dimensions including the image, technical quality, functional quality, and quality of peripheral products, with each dimension having between one and four quality attributes. Their research focused on trying to identify relationships between perception scores and the SERVQUAL concept of service gaps. The priority of issues to be addressed began with attributes that were classified as critical that had high

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expectations and high service gaps (Sia & Muthusamy, 2011). The model allows for mapping of perception values and service gaps as an alternative method which can be used to identify and prioritize quality attributes.

Case (2003) analyzed the change and customer service associated with the incorporation of technology at the University of North Carolina at Chapel Hill. Specifically, the study was conducted to examine two administrative systems including research administration and human resource management. Case found that a commitment towards customer service was not a primary focus during the process. In the course of the study, Case noted how essential it was to initially make clear that superiority in customer service was important in whatever administrative system was being developed (Case, 2003).

SERVQUAL and other models have not only been used in higher education to measure student experience. The service quality model has also been modified to evaluate customer satisfaction of the faculty and staff of technology support offices in higher education (Niederriter, 1999; Nwankwo, 2007). The service quality dimensions of both Zeithaml et al. (1990) and Besterfield et al. (1995) have been used in at least two dissertations, those of Niederriter (1999) and Nwanko (2007), to measure customer satisfaction levels with higher education technology offices. Niederriter and Nwankwo analyzed customer satisfaction levels in community college technology offices based on TQM principles. Other dissertations have measured customer satisfaction and used the SERVQUAL model in higher education in a variety of different ways.

Niederriter (1999) found that there were no statistically significant differences in customer satisfaction of the faculty and staff of their technology support office. Her study was conducted using Zeithaml et al.'s (1990) 10 service dimensions and Besterfield et al.'s (1995) five dimensions. Data analyzed were collected from 30 faculty and 28 staff. Of the 58 respondents, 18 were male and 40 were female. Niederriter did not find any significant differences when examining each dimension for faculty and staff for either the 10 dimensions of Zeithaml et al. (1990) or the five dimensions measured by Besterfield et al. (1995).

Niederriter's (1999) survey had two questions for each of the 10 original dimensions (Zeithaml et al., 1990), and one question for each of the five dimensions (Besterfield et al., 1995). The two questions for each of the 10 dimensions of service quality were averaged together to get a single score for each dimension. In addition to the 20 questions based on Zeithaml et al. (1990) and the five questions based on Besterfield et al. (1995), an additional survey question was added to address overall satisfaction. Each of these 26 questions were rated by the respondent as Strongly Agree (1), Agree (2), Undecided (3), Disagree (4), or Strongly Disagree (5).

The results for faculty and staff, including the means for faculty and staff, independent sample *t* test scores, and *p*-values, are shown in Table 3 (Niederriter, 1999, pp. 101-104). Niederriter's (1999) results indicated that the courtesy dimension had the highest rating with a faculty mean score of 1.71 and a staff mean score of 1.81. The results indicated that tangibles had the lowest rating with a faculty mean score of 2.93 and a staff mean score of 3.19 (Niederriter, 1999).

Table 3

Comparison of Faculty and Staff Means of Service Dimensions based on Niederriter (1999) Survey

Service Dimension	Faculty Mean	Staff Mean	t	p
Access	2.26	2.29	0.12	0.91
Communication (Zeithaml et al.)	2.54	2.74	0.73	0.47
Competence	2.48	2.46	0.08	0.94
Courtesy	1.71	1.81	0.67	0.51
Credibility	2.41	2.25	0.64	0.53
Reliability	2.27	2.20	0.23	0.82
Responsiveness	2.39	2.25	0.49	0.63
Security	2.02	1.84	0.85	0.40
Tangibles	2.93	3.19	0.99	0.33
Understanding the customer	2.76	2.73	0.16	0.87
Organization	2.72	2.68	0.21	0.84
Customer care	2.38	2.21	0.53	0.60
Communication (Besterfield et al.)	1.83	2.15	1.52	0.13
Front-line people	1.90	2.11	0.94	0.35
Leadership	2.46	2.61	0.52	0.61
Overall satisfaction	2.36	2.21	0.45	0.66

Note. Survey responses ranged from 1= strongly agree to 5 = strongly disagree.
Source. Niederriter, 1999, pp. 101-104.

Niederriter (1999) included a qualitative question in the survey which asked respondents the reason why they were satisfied. The main responses mentioned by respondents (in percentages) for their satisfaction were: handling maintenance, 26%; personal attributes of the staff, 23%; technology assistance, 21%; and customer support, 19% (Niederriter, 1999, p. 106). Niederriter also included a question in the survey asking respondents why they were not satisfied. The main responses mentioned by respondents (in percentages) for their dissatisfaction were: need for improvement in staffing levels, 27%; and level of staff technology level knowledge, 20% (Niederriter, 1999, p. 111).

Niederriter indicated that campus IT departments should use TQM strategies to advance services with a focus on rapid response times.

Nwankwo (2007) measured the level of customer satisfaction for faculty and staff at Houston Community College to see if there were any significant differences. He used the 10 service dimensions by Zeithaml et al. (1990), five dimensions by Besterfield et al. (1995), and an overall satisfaction dimension. Using a modified version of the same survey developed by Niederriter (1999), Nwankwo gathered data from 301 respondents including 130 faculty and 171 staff members. The survey included 27 Likert-type scale questions which were rated by respondents as follows: strongly disagree = 1, disagree = 2, somewhat disagree = 3, somewhat agree = 4, agree = 5, and strongly disagree = 6. The results showed there was no statistically significant difference between faculty and staff overall customer satisfaction levels (Nwankwo, 2007). When using independent sample t tests, comparing the 16 dimensions of quality service, it was found that only one dimension, measuring security, was significantly different (Nwankwo, 2007). One of the two questions measuring security asked whether individuals trusted IT staff to work on their office computers when the faculty or staff member was not present. For the staff, only 13.9% of the respondents strongly agreed, but for the faculty, 27.2% of the respondents strongly agreed (Nwankwo, 2007, p. 103). Table 4 shows a comparison of the faculty and staff means of all 16 dimensions from the Nwankwo study.

Table 4

Comparison of Faculty and Staff Means for Service Dimensions based on Nwankwo (2007) Survey

Service Dimension	Faculty Mean	Staff Mean
Access	4.48	4.64
Communication (Zeithaml et al.)	3.99	3.97
Competence	4.02	3.84
Courtesy	4.81	4.81
Credibility	3.95	3.97
Reliability	4.23	4.16
Responsiveness	4.16	4.13
Security	4.35	4.14
Tangibles	4.31	4.40
Understanding the customer	4.21	4.15
Organization	4.18	4.14
Customer care	4.18	4.18
Communication (Besterfield et al.)	4.57	4.59
Front-line people	4.69	4.42
Leadership	3.60	3.67
Overall satisfaction	4.17	4.20

Note. Survey responses ranged from 1 = strongly disagree to 6 = strongly agree.
Source. Nwanko, 2007, p. 90.

Nwankwo (2007) asked open-ended questions to elicit data on what was satisfying, what needed improvement, and to provide any other comments the faculty or staff wished to make on the IT service. The most common reason for staff satisfaction with 47% of the staff responding, was "knowledgeable staff, courtesy, promptness, and quick response" (Nwankwo, 2007, p. 126) with the most common reason being promptness. The most common reasons offered for faculty satisfaction were similar to those of staff. A total of 54% of faculty responding indicated IT service could be described as "knowledgeable, courtesy, and promptness" (Nwanko, 2007, pp. 135-136).

A total of 85 staff and 75 faculty commented on what needed improvement. The staff commented most frequently on the need for better training of the IT staff, more prompt service, and better communication with the staff (Nwankwo, 2007). The faculty indicated six areas in need of improvement including (a) response time, (b) staff levels of IT, (c) training in technology and people skills, (d) communication, (e) leadership, and (f) better equipment and software (Nwankwo, 2007). It was clear, based on the results of Nwanko's study, that two of the key factors (knowledge of the staff and prompt response to requests) led to satisfaction for some faculty and staff as well as dissatisfaction for other faculty and staff.

Niederriter (1999) and Nwankwo (2007) conducted studies that were based on the survey developed by Niederriter. The scale used by Nwankwo, however, differed from that of Niederriter. Niederriter's survey used a five-choice Likert-type scale ranging from 1 to 5 where 1 = strongly agree, 2 = agree, 3 = undecided, 4 = disagree, and 5 = strongly disagree. Nwankwo's survey used a six-choice Likert-type scale ranging from 1 to 6 where 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, and 6 = strongly agree. All dimensions, including the overall satisfaction dimension, were ranked in order from 1 to 16 with 1 being the highest ranked and 16 being the lowest rank. The ranking was based on the average value of the means for both faculty and staff. The results are shown in Table 5 for Niederriter and in Table 6 for Nwankwo. This researcher calculated the average value of each dimension's means for all employees. For the Niederriter study, the average values were calculated by first multiplying the mean score for faculty respondents by 30 faculty respondents, and adding

to it the mean score for staff respondents multiplied by 28 staff respondents. This total

score was then divided by 58 respondents. For the Nwankwo study, the average value of

each mean was calculated by multiplying the mean score for faculty respondents by 130

faculty respondents, and adding it to the mean score for staff respondents multiplied by

171 staff respondents. This total score was then divided by 301 respondents.

Table 5

Service Dimensions: Faculty and Staff Overall Means and Rank Order of 16 Dimensions
(Niederriter, 1999)

Service Dimension	Overall Mean	Rank Order
Access	2.27	6
Communication (Zeithaml et al.)	2.64	13
Competence	2.47	11
Courtesy	1.76	1
Credibility	2.33	10
Reliability	2.24	5
Responsiveness	2.32	9
Security	1.93	2
Tangibles	3.06	16
Understanding the customer	2.75	15
Organization	2.70	14
Customer care	2.30	8
Communication (Besterfield et al.)	1.98	3
Front-line people	2.00	4
Leadership	2.53	12
Overall satisfaction	2.29	7

Note. Survey responses ranged from 1 = strongly agree to 5 = strongly disagree.
Source. Niederriter, 1999, pp. 101-104.

Table 6

Service Dimensions: Faculty and Staff Overall Means and Rank Order of 16 Dimensions (Nwankwo, 2007)

Service Dimension	Overall Mean	Rank Order
Access	4.57	3
Communication (Zeithaml et al.)	3.98	13
Competence	3.92	15
Courtesy	4.81	1
Credibility	3.96	14
Reliability	4.19	7
Responsiveness	4.14	12
Security	4.23	6
Tangibles	4.36	5
Understanding the customer	4.18	10
Organization	4.16	11
Customer care	4.18	9
Communication (Besterfield et al.)	4.58	2
Front-line people	4.54	4
Leadership	3.64	16
Overall satisfaction	4.19	8

Note. Survey responses ranged from 1 = strongly disagree to 6 = strongly agree.
Source. Nwanko, 2007, p. 90.

Nwankwo (2007) developed his survey by modifying the Niederriter (1999) survey. The results of the survey indicated the rank of every dimension was a maximum of five ranks apart not including the dimension tangibles. Tangibles was ranked 16th in Niederriter and 5th in Nwankwo; however, Nwankwo had modified the questions on tangibles significantly for the study. The questions for tangibles by Niederriter were "the computer services department has a designated reception area" and "the computer services department employs a sufficient number of personnel to meet my computing needs" (Niederriter, 1999, p. 148). Nwankwo used three questions instead of two

questions for the tangibles dimension of which only one was very similar to Niederriter's

questions on tangibles. The questions for tangibles by Nwankwo were "HCC IT

personnel has a designated area on my campus," "HCC IT Dept has a well published

phone number to report problem or request help," and "HCC IT Dept employs a

sufficient number of staff to meet my computing needs" (Nwankwo, 2007, p. 196).

Nwanko's change of questions would explain the difference in the ranking result of the

tangibles dimension. Thus, based on this researcher's review of the results of the two

studies, the only dimension with significant differences was the tangibles dimension.

Both Niederriter (1999) and Nwankwo (2007) used the same 16 dimensions and

had the dimension, courtesy, as the highest-ranked dimension. Two of the dimensions in

Besterfield et al.'s (1995) work, communication and front-line people, were in the top

four rankings for the Niederriter and Nwankwo studies. Both Niederriter and Nwankwo

provided valuable information on the dimensions of service quality that can assist the

technology manager in understanding what dimensions might need more attention.

CHAPTER 3
METHODOLOGY

Introduction

The purpose of this chapter is to explain the methods and procedures that were used to collect the data and complete the data analysis. In addition to a restatement of the problem and the research questions, this chapter also provides detailed information about the population, instrumentation, data collection, variables, and data analysis used to conduct the study.

Statement of Problem

The problem of this study is that there has been very limited research conducted on university technology departments' customer satisfaction levels examining the demographic characteristics of the higher education faculty and staff being served. Technology managers must create a high level of customer service in their departments in order to be successful. There may be a difference in how different faculty and staff perceive a technology department's customer service based on their gender, whether they are faculty or staff members, their educational level, or their age. It is important to understand how customer service should be implemented so that all faculty and staff perceive customer satisfaction levels effectively. This study was conducted to determine if there were any statistically significant differences between customer satisfaction levels of full-time faculty and full-time staff based on demographic characteristics.

<u>Purpose of the Study</u>

The purpose of this study was to determine what differences may exist in customer satisfaction levels with regard to higher education faculty and staff served by a university technology department. At the time of the study, there was a void in literature examining which demographic characteristics were indicators of different levels of customer satisfaction in a technology department. Technology managers can better implement customer service in their departments knowing which demographic characteristics have different customer satisfaction levels. The purpose of this study, therefore, was to investigate demographic characteristics and determine the extent to which they were influential with regard to different levels of customer satisfaction in one college's technology department.

Potential differences in customer satisfaction using TQM principles can help technology directors predict which demographic traits may require different approaches. A better understanding of any differences allows technology directors to maximize their customer service strategies. Technology support requests involve many different facets, and it is important to understand the different aspects of the needs of the customer. This will allow the technology office to provide better technology support. The results of the study should equip technology directors to be more cognizant of potential differences in customer satisfaction and accordingly adjust how they might react to someone based on the specific demographic characteristic.

Population

The population for the study was defined as full-time faculty and full-time staff members in the College of Education and Human Performance located at the University of Central Florida. The full-time faculty and staff list was generated 10 days prior to the implementation of the survey. The list identifying all full-time employees in the College of Education and Human Performance at the University of Central Florida was provided to this researcher with the assistance of the human resource system of the university. As of September 14, 2013, there were 205 full-time faculty and full-time staff in the College of Education and Human Performance at the University of Central Florida. Because the researcher was part of the full-time staff, he was excluded from the survey which was sent to the remaining 204 full-time faculty and staff.

Full-time faculty and full-time staff located on the main Orlando campus, as well as on regional campuses in Central Florida, were surveyed. Approximately 25 faculty and staff had a regional campus as their principal location. Though these regional campus faculty and staff members were served by different technology offices on their respective campuses, the technology office on the main campus provided assistance when requested. The College of Education and Human Performance also had received federal and state grants that hire full-time staff who are located on either the main Orlando campus or throughout the state. The population surveyed included all full-time faculty and full-time staff of the college regardless of their principal location.

The full-time faculty and full-time staff at the College of Education and Human Performance were sent an email informing them about the study and asking them to

respond to an online survey. The full-time faculty and full-time staff who voluntarily responded to the survey constituted the final population for whom data were analyzed.

Research Questions and Hypotheses

The following research questions and hypotheses were used to guide the study:

1. What is the difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff?

   H_{01} There is no difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff.

2. What is the difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff?

   H_{02} There is no difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff.

3. What is the difference in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff?

   H_{03} There is no difference in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff.

4. What is the difference in customer satisfaction using TQM principles in a technology office at a large university based on the age of faculty and staff?

H_{04} There is no difference in customer satisfaction using TQM principles in a technology office at a large university based on the age of faculty and staff.

Instrumentation

The instrumentation used in this study was modified from a survey that was developed by Niederriter (1999) to measure customer satisfaction levels of technology departments at a community college in Arizona (See Appendix B). Niederriter met with different representatives from the college to determine appropriate items to include on a survey. The conceptual framework for the study was based on Zeithaml et al.'s (1990) 10 dimensions and Besterfield et al.'s (1995) five dimensions determining customer satisfaction. Niederriter validated the survey using a pilot survey followed by a second pilot survey and was able to determine reliability of the questions included. Nwankwo (2007) used a modified version of the Niederriter survey in examining the customer satisfaction levels of a community college in Texas. Nwankwo used the original survey developed by Niederriter but modified a few of the questions.

The demographic questions of this researcher's survey added a question on both education level and age, and the location question was modified to principal location of employment in order to distinguish full-time faculty and full-time staff located on the main Orlando campus from those situated on a regional campus location. In addition, ethnic membership was not included as part of this researcher's survey. The survey

questions were left intact except the name of the department which was changed from "computer services" to "CEDHP Technology Office" to clearly identify the department. In addition, Question 5 was modified from "The computer services staff promptly returns my phone calls" to "CEDHP Technology Office promptly returns my phone calls and emails" due to the increasingly common use of email since the Niederriter survey was administered.

Niederriter's (1999) survey was developed based on the work of Zeithaml et al. (1990) and Besterfield et al. (1995). The survey was validated by Niederriter with a high level of reliability (Niederriter). Zeithaml et al. (1990) identified 10 dimensions of quality service, which were "tangibles, reliability, responsiveness, competence, courtesy, credibility, security, access, communication, and understanding the customer" (Zeithaml et al., 1990, p. 20). Besterfield et al. (2003) identified five dimensions of customer service including "organization," "customer care," "communication," "front-line people," and "leadership" (Besterfield et al., 2003, pp. 76-77). Although Besterfield et al. (2003) wrote two editions of a total quality management text, one in 1995 and a second in 2003, Niederriter (1999) used the first edition of the text to identify five key components of service quality using TQM. Niederriter's 15 dimensions and corresponding questions are shown in Appendix C. Niederriter added a question on overall satisfaction to her survey in 1999, bringing the total number of dimensions analyzed to 16.

The instrument that Zeithaml et al. (1990) developed was known as SERVQUAL. It is an instrument comprised of two sections which is used to measure service quality. The first section has 22 statements the customer would evaluate based on the customer's

expectations for a service. The second section has 22 statements matching one for one each of the 22 statements in the first section. The second section does not focus on the customer's expectations; rather, the 22 statements explore the customer's perceptions of the service they received. These statements were used to analyze the customer satisfaction level based on the original 10 dimensions in the research. The 10 dimensions were eventually reduced to five (tangibles, reliability, responsiveness, assurance, and empathy). Three of the original 10 dimensions which were part of the final five dimensions were tangibles, reliability, and responsiveness. The fourth dimension of assurance consisted of competence, courtesy, credibility, and security. The fifth dimension of empathy consisted of access, communication, and understanding the customer. For the purpose of this study, Zeithaml et al.'s (1990) original 10 dimensions were used.

The instrument used in the present study contained 29 questions and used the same format as Niederriter (1999). There were two questions for each of Zeithaml et al.'s (1990) 10 dimensions and one question for each of the Besterfield et al.'s (1995) five dimensions. The results of the two questions in each of the Zeithaml et al.'s (1990) dimensions were averaged to produce a score. Because Besterfield et al. (1995) used only one question per dimension in the survey, the response to each question resulted in a score for the corresponding dimension. There was also a question on overall satisfaction which was treated as a 16th dimension of the survey. Each of these 16 dimensions was compared to the different categories in each of the four areas of gender, faculty versus staff status, educational level, and age.

In addition to the 26 Likert-type response questions, respondents were presented with three qualitative questions. The first qualitative question asked which services the respondent found satisfying. The second question asked which services the respondent believed needed improvement. The third question was very open-ended asking for any information the respondent wanted to share about the technology office. Thus, the instrument focused on both quantitative and qualitative data that were used to answer the research questions posed in the survey.

<u>Data Collection</u>

This data were collected using email technology to contact all full-time faculty and full-time staff at the College of Education and Human Performance who were located on the Orlando campus or one of the regional campuses. The College of Education and Human Performance provided the official university email address of faculty and staff who met the criteria. An email was sent describing the purpose of the survey and requesting that all full-time faculty and full-time staff in the College of Education and Human Performance complete the survey.

The survey was developed in the online survey tool Qualtrics, and the email contained a link to the questionnaire in Qualtrics. The survey had demographic characteristic questions on gender, faculty or staff status, the principal place of employment, educational level, age, and the number of years employed at the college. The survey had Likert-type scale questions evaluating customer satisfaction levels. The questions asked employees to read a statement and then select one of the five radio

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buttons which had the choices of strongly agree, agree, undecided, disagree or strongly

disagree. There was no radio button pre-selected; thus, if the employee did not answer

the question, no radio button would be selected. The five choices in each question were

converted into numbers where strongly disagree = 1, disagree = 2, undecided = 3, agree =

4, and strongly agree = 5. There were also three qualitative questions inquiring as to

specific areas of services the respondent found satisfying, specific areas of services the

respondent found needed improvement, and an open-ended question where respondents

could make any additional comments regarding the technology department.

That the survey was anonymous was made clear to participants. After one week,

everyone was sent a second email requesting them to complete the survey if they had not

already done so. After two additional weeks, the survey was closed and no additional

responses were accepted.

<div align="center">Variables</div>

The dependent variable was customer satisfaction level which is an interval/ratio

variable. The variable customer satisfaction was measured by asking the same questions

used by Niederriter (1999) in a survey at a community college in Arizona. Niederriter

had developed a survey to measure customer satisfaction for technology departments

using TQM principles that were based on the research of Zeithaml et al. (1990) and

Besterfield et al. (1995). The survey questions were derived from Niederriter's

dissertation which assessed customer satisfaction of technology departments using TQM

principles (Niederriter, 1999). The survey contained questions that were based on 10

dimensions identified by Zeithaml et al. (1990) and five dimensions identified by Besterfield et al. (1995).

The four independent variables were gender, whether the employee was categorized as a faculty or staff member, educational level, and age. Gender was a nominal variable measured by asking the respondents to identify as male or female. Faculty or staff status was a nominal variable asking each respondent whether they were faculty or staff members. Education level of the faculty or staff member was an ordinal variable measured by asking the respondent to identify their highest level of education completed at the time of the survey. The categories were: (a) high school or GED diploma, (b) associate degree or technical certification, (c) four-year degree, (d) master's degree, and (e) doctoral or other terminal degree. Age of the faculty or staff member was an ordinal variable measured by asking the respondents to identify their age based on six age groupings. The age groups were: (a) 18-29, (b) 30-39, (c) 40-49, (d) 50-59, (e) 60-69, or (f) 70+.

Data Analysis

Quantitative Data

The researcher sought to determine differences between 16 dimensions measured by customer satisfaction levels as they related to gender, faculty or staff member status, educational level, and age. The data collected were entered into the Statistical Package for the Social Sciences (SPSS) for analysis.

An independent *t* test was initially planned to be used to determine if there were significant differences in gender compared to the 16 dimension representing customer satisfaction and faculty versus staff status compared to the 16 dimensions. A *t* test is typically used when it can be assumed that the dependent variable being analyzed is normally distributed. However, if the dependent variable is not normally distributed, the Mann-Whitney *U* test should be used instead of the *t* test. Due to the significant skewness of the data for customer satisfaction levels, a Mann-Whitney *U* test was used instead of a *t* test to determine if there were differences in the 16 customer satisfaction dimensions and whether the employee was a faculty or staff member. The Mann-Whitney *U* test determines if two independent groups such as full-time faculty and full-time staff have similar ranked distributions.

A one-way analysis of variance (ANOVA) was also planned to determine if there were significant differences in educational level groupings compared to each of the 16 dimensions representing customer satisfaction and in the age groupings compared to each of the 16 dimensions. Use of an ANOVA test assumes that the dependent variable being analyzed is normally distributed. Due to the significant skewness of the data, the Kruskal-Wallis *H* test was used instead of an ANOVA test to determine the differences in customer satisfaction dimensions and the educational level of the faculty and staff.

Qualitative Data

The three open-ended questions asked respondents about (a) services that were satisfying, (b) services in need of improvement, and (c) any other comments the

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respondent wanted to make regarding services. These data were intended to elicit additional customer satisfaction information beyond that obtained in the survey's quantitative data.

The qualitative data obtained from these responses were summarized, and common statements were grouped. In the analysis of the first qualitative question regarding services that were satisfying, the researcher linked the respondents' comments with the SERVQUAL dimension or dimensions that were reflected in the comments. In the analysis of the second qualitative question regarding services in need of improvement, the researcher reviewed the comments for commonalities and grouped common statements to determine specific areas that were most frequently mentioned. The third qualitative question was provided to give the respondent an area to comment on anything they had not already mentioned in the survey. A total of 60 respondents provided comments; however, they were not able to be categorized due to the wide variety of answers. An unedited listing of all responses to Survey Question 29 is contained in Appendix G.

CHAPTER 4
DATA ANALYSIS

Introduction

This chapter contains an analysis of the data collected from the full-time faculty and full-time staff who completed and returned the survey instrument. Presented are descriptive and inferential statistics and findings and a comparison of the findings in two prior studies and the present study that were based on the Niederriter (1999) instrument. The descriptive statistics section contains a summary of the demographic data and both quantitative and qualitative data obtained from the survey items. The inferential statistics section is devoted to reporting the results of the use of statistical tests to answer the four research questions posed in the study. The final section permits a comparison of findings in two earlier studies that were also based on Niederriter's survey of customer satisfaction.

Descriptive Statistics and Findings

A total of 205 potential respondents were generated on September 14, 2013 based on the status of university employees as of that date. After removing the researcher from the list, the final population consisted of 204 full-time faculty and full-time staff. Thus, a total of 204 surveys were distributed via email using Qualtrics to all full-time faculty and full-time staff at the College of Education and Human Performance at the University of Central Florida. The survey was initially distributed on September 24, 2013 and closed on October 14, 2013, lasting a total of three weeks. Because the survey was anonymous,

a reminder email was sent to all participants on the eighth day of the survey period. There was a 75% response rate with 153 of the 204 surveys having been completed; however, one respondent who provided only demographic information was excluded. This resulted in a total of 152 usable responses and a usable response rate of 74.5%. Table 7 presents a summary of the days, dates, and percentage of respondents by date on which the 153 surveys were received. All further analyses of data in the study were based on the data from the 152 usable responses to the survey.

Table 7

Response Rate of Surveys by Date (N=153)

Day	Response Date	Respondents n	%
1	September 24, 2013	90[a]	58.82
2	September 25, 2013	14	9.15
3	September 26, 2013	4	2.61
4	September 27, 2013	7	4.58
5	September 28, 2013	1	0.65
6	September 29, 2013	2	1.31
7	September 30, 2013	4	2.61
8	October 1, 2013	21[b]	13.73
9	October 2, 2013	4	2.61
10	October 3, 2013	2	1.31
11	October 4, 2013	1	0.65
12	October 5, 2013	1	0.65
17	October 10, 2013	1	0.65
18	October 11, 2013	1	0.65

[a]First day of survey. [b]Reminder message sent.

The survey consisted of six demographic questions, 26 Likert-type response questions, and three open-ended questions. The demographic data acquired from the

respondents were gender, faculty versus staff status, the principal place of employment (Orlando campus versus regional campus), the highest educational level completed as of the survey, age, and the number of years employed by the College of Education and Human Performance. Because all questions did not require a response, some of the demographic data did not have 152 responses. All 152 of the respondents answered the demographic questions on gender, the principal place of employment, the highest educational level, and the number of years employed. For faculty versus staff status, three employees selected the choice, "other," and one employee did not respond to the question. Consequently, of the 152 respondents, four were excluded from the analysis of the faculty versus staff status question leaving a total of 148 respondents to be used for analysis of that demographic. Two of the respondents chose not to answer the question on age leaving 150 respondents to be used for analysis of that demographic.

Table 8 contains data related to Survey Question 1 regarding gender and status of respondents. For Survey Question 1 regarding gender, the total number of people sent the survey was 204 including 62 males (30.39%) and 142 females (69.61%). For gender, the number of males responding was 51 (33.55%), and the number of females responding was 101 (66.45%). Given the similarity of gender distribution between those who responded and the population, it was reasonable to conclude that the results are generalizable at least in terms of gender.

For Survey Question 2 regarding full-time faculty versus full-time staff status, the 204 population sent the survey included 141 full-time faculty (69.12%) and 63 full-time staff (30.88%). Of the 148 respondents, 103 (69.59%) were faculty, and 45 (30.41%)

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were staff members. Given the similarity of full-time faculty versus full-time staff

distribution between those who responded and the population, it was reasonable to

conclude that the results of the analyses were generalizable at least in terms of full-time

faculty versus full-time staff.

Table 8

Population and Response Rate by Gender and Status of Respondents (N=152)

	Population Surveyed		Response Rate	
Descriptor	*n*	*%*	*n*	*%*
Gender				
Male	62	30.39	51	33.55
Female	142	69.61	101	66.45
Status				
Faculty	141	69.12	103	69.59
Staff	63	30.88	45	30.41

Table 9 contains data regarding respondents' principal place of employment,

highest educational level, age, and years of employment. For Survey Question 3

regarding principal place of employment, the number of respondents on the main campus

was 132 (86.84%) and the number of respondents on the regional campuses was 20

(13.16%). For Survey Question 4 regarding the highest educational level, 128 (84%) of

all respondents classified themselves as having completed either a master's degree, or a

doctoral or other terminal degree. For Survey Question 5 regarding age, most

respondents were in the age categories from 30 to 69 which represented 94% of the

respondents. For Survey Question 6 regarding the number of years employed, almost

72% of the respondents had been employed at the college for over five years.

Table 9

Respondents' Place of Employment, Educational Level, Age, and Years of Employment (N=152)

Descriptor	N	%
Principal Place of Employment		
Main campus	132	86.84
Regional campus	20	13.16
Highest Completed Educational Level		
High school diploma	7	4.61
Associates degree or technical certification	3	1.97
Four-year degree	14	9.21
Master's degree	30	19.74
Doctoral or other terminal degree	98	64.47
Age		
18-29	4	2.67
30-39	31	20.67
40-49	42	28.00
50-59	34	22.67
60-69	34	22.67
70 and above	5	3.33
Years of Employment		
Up to 1	8	5.26
1-2	19	12.50
3-5	16	10.53
Over 5	109	71.71

The demographic section of the survey was followed by 26 questions that used a

Likert-type response scale and three open-ended questions. The open-ended qualitative

questions asked about services that were satisfying, services in need of improvement, and a space for any other comments the respondent wanted to show in the survey. The 26 questions called for Likert-type scale responses ranging from 1 (strongly disagree) to 5 (strongly agree). In Table 10, the mean and mode scores for each of the questions corresponding to Zeithaml et al.'s (1990) 10 dimensions are displayed. In Table 11, the mean and mode scores for each of the questions corresponding to Besterfield et al.'s (2003) five dimensions are displayed. In Table 12, the mean and mode score for the overall satisfaction question is displayed. All of the 26 Likert scale questions were answered by a minimum of 148 of the respondents. With the exception of two questions, the mode for all 26 questions was 5. The two questions (9 and 24) with a mode of 4 were both related to the dimension, tangibles.

Table 10

10 Dimensions of Zeithaml et al. (1990), Associated Survey Questions, Means, and Modes (N=152)

Dimension	Question	Mean	Mode
Access	Q4. The CEDHP Technology department has a central contact point for requesting services.	4.74	5
	Q13. The CEDHP Technology department staff is available to meet a sufficient number of hours each day to meet my computing needs.	4.53	5
Communication	Q7. If my computing problem cannot be solved immediately, the computer services staff gives me progress reports.	4.31	5
	Q14. The CEDHP Technology department staff explains what action they will take to resolve my computer problems.	4.58	5
Competence	Q12. The CEDHP Technology department staff is knowledgeable.	4.77	5
	Q19. The CEDHP Technology department staff offers effective one-on-one training.	4.10	5
Courtesy	Q2. The CEDHP Technology department staff is courteous.	4.82	5
	Q20. The CEDHP Technology department staff treats me with respect.	4.85	5
Credibility	Q8. The CEDHP Technology department delivers what it promises.	4.63	5
	Q21. The CEDHP Technology department has a credible reputation.	4.68	5

Dimension	Question	Mean	Mode
Reliability	Q3. The CEDHP Technology department provides dependable service.	4.68	5
	Q22. The CED Technology department is generally consistent in their delivery of services.	4.66	5
Responsiveness	Q5. The CEDHP Technology department staff promptly returns my phone calls and emails.	4.72	5
	Q11. The CEDHP Technology department provides prompt service.	4.61	5
Security	Q15. I trust the CEDHP Technology department staff to work on my office computer in my office when I am not present.	4.81	5
	Q23. I have no doubt about the services I receive.	4.56	5
Tangibles	Q9. The CEDHP Technology department has an appropriate reception area.	3.74	4
	Q24. The CEDHP Technology department employs a sufficient number of personnel to meet my computing needs.	3.97	4
Understanding the Customer	Q6. The CEDHP Technology department is never too busy to give me personal attention.	4.49	5
	Q10. The CEDHP Technology department shows an understanding of my support needs.	4.56	5

Table 11

Five Dimensions of Besterfield et al. (2003), Associated Survey Questions, Means, and Modes (N=152)

Dimension	Question	Mean	Mode
Organization	Q16. The CEDHP Technology department provides similar service to all its customers.	4.12	5
Customer Care	Q1. The CEDHP Technology department meets my computing expectations.	4.58	5
Communication	Q25. The CEDHP Technology department staff is patient when listening to my computing questions.	4.73	5
Front-Line People	Q17. The CEDHP Technology department staff are approachable.	4.79	5
Leadership	Q18. The CEDHP Technology department provides direction for technology advancement on my campus.	4.14	5

Table 12

Overall Satisfaction Dimension, Associated Survey Question, Mean, and Mode (N=152)

Dimension	Survey Question	Mean	Mode
Overall Satisfaction	Q26. Overall, I am satisfied with the quality of service provided by the CEDHP Technology Department.	4.73	5

The first qualitative question, Survey Question 27, requested that respondents indicate areas of service that they found satisfying. Responses totaled 95, and the researcher categorized each response into one or more of the five SERVQUAL dimensions. Many respondents mentioned multiple dimensions. Seven of the

respondents simply made a general comment such as "all areas of service," "all of my

experiences," or "I am completely satisfied." These responses were placed in the

category, Overall Response. The five SERVQUAL dimensions and the number of

respondents associated with each dimension are shown in Table 13.

Table 13

Specific Areas of Service Satisfaction by SERVQUAL Dimensions (N=95)

Dimension	Responses
Responsiveness	64
Reliability	49
Assurance	32
Empathy	25
Overall response[a]	7
Tangibles	2

[a]Overall response is not one of the SERVQUAL dimensions. It is a general category used for respondents who made a single comment about their general satisfaction without specifying a particular dimension.

The second qualitative question, Survey Question 28, queried respondents about

specific areas of service that they believed were in need of improvement. A total of 83

respondents answered the question. The most common answers were none, larger staff,

and office space. The responses, grouped in categories developed by the researcher, are

shown in Table 14. Some respondents' comments were appropriate for multiple

categories.

Table 14

Specific Areas of Service in Need of Improvement (N=84)

Service Area in Need of Improvement	Responses[a]
None	26
Larger staff	22
More office space or larger reception area	17
New equipment/software	10
Bigger budget for tech office	5
More expertise or enriching faculty with training	5
Excessive procedures at UCF or college	3
Response time	3
Tech support/more solutions	3
Ability to update software	2
More communication of what is available	2
More organized looking office	2
Open longer hours or Saturday	2
Regional campus network or support	2
Advice on personal equipment	1
Leaving employee's work space in unacceptable condition	1

[a]Some respondents provided multiple responses.

The third qualitative question, Survey Question 29, asked for any comments the respondent wished to make. A total of 60 respondents provided comments; however, they were not able to be categorized due to the wide variety of answers. An unedited listing of all responses to Survey Question 29 is contained in Appendix G.

Inferential Statistics and Findings

This research study was guided by four research questions and null hypotheses. In the following sections, the data analyses performed to respond to each of the questions is reported using tables and narratives.

Research Question 1

What is the difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff?

H_{01} There is no difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff.

The Mann-Whitney U test compared the mean ranks for males and females for each of the 16 customer satisfaction dimensions. The purpose was to determine if there was a statistically significant difference between genders for any of the 16 dimensions. The Mann-Whitney U test was conducted using an alpha of 0.05 for each test. The scores were rank ordered and a Mann-Whitney U test was used to compare the ranks for the 51 males versus 101 females. Of the 16 dimensions, 14 of the dimensions were not significant, and two of the dimensions were significant. Regarding the 10 Zeithaml et al. (1990) dimensions, two of the dimensions, tangibles and understanding the customer, were significant as shown in Table 15. The Mann-Whitney U test showed there was a statistically significant difference between tangibles and gender, $U = 3,184.500$, $p = 0.016$. The mean rank of males was equal to 64.56, and the mean rank of females was equal to 82.53. The Mann-Whitney U test showed there was also a statistically significant difference between understanding the customer and gender, $U = 3,103.000$, $p = 0.027$. The mean rank of males was equal to 66.16 and the mean rank of females was equal to 81.72. Males had a lower rating of both tangibles and understanding the customer than females. All of the remaining eight dimensions for Zeithaml et al. (1990),

the five dimensions for Besterfield et al. (2003), and the overall satisfaction dimension

were not significant as shown in Tables 16 and 17, respectively.

Table 15

Mann-Whitney U Test to Determine Difference in Zeithaml et al. (1990) Customer
Satisfaction Dimensions and Gender

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Access	151	2,721.000	226.517	0.755	0.450
Communication	152	2,771.500	243.624	0.805	0.421
Competence	152	2,940.500	244.985	1.490	0.136
Courtesy	152	2,750.000	175.311	0.995	0.320
Credibility	152	2,795.500	224.499	0.980	0.327
Reliability	152	2,740.500	220.370	0.749	0.454
Responsiveness	152	2,709.500	223.527	0.599	0.549
Security	152	2,613.500	219.284	0.173	0.862
Tangibles	152	3,184.500	251.676	2.420	0.016
Understanding customer	152	3,103.000	237.872	2.218	0.027

Note. *SE* is the standard error and z is the standardized test statistic.

Table 16

Mann-Whitney U Test to Determine Difference in Besterfield et al. (2003) Customer Satisfaction Dimensions and Gender

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Organization	151	2,826.500	236.338	1.170	0.242
Customer Care	152	2,943.000	214.185	1.716	0.086
Communication	150	2,755.000	181.692	1.269	0.205
Front-Line People	150	2,455.500	172.546	-0.400	0.689
Leadership	148	2,688.500	230.280	1.036	0.300

Note. *SE* is the standard error and *z* is the standardized test statistic.

Table 17

Mann-Whitney U Test to Determine Difference in Overall Customer Satisfaction Dimension and Gender

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Overall Satisfaction	152	2,704.500	183.714	0.702	0.483

Note. *SE* is the standard error and *z* is the standardized test statistic.

Research Question 2

What is the difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff?

H_{02} There is no difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff.

The Mann-Whitney *U* test compared the mean ranks for full-time faculty versus full-time staff for each of the 16 customer satisfaction dimensions. The purpose was to determine if there was a statistically significant difference between full-time faculty and full-time staff for any of the 16 dimensions. The Mann-Whitney *U* test was conducted using an alpha of 0.05 for each test. The scores were rank ordered and a Mann-Whitney *U* test was used to compare the ranks for faculty (*n* = 103) versus the staff (*n* = 45). Of the 16 dimensions, all except one were not significant. Regarding the 10 Zeithaml et al. (1990) dimensions, courtesy was significant as shown in Table 18. The Mann-Whitney *U* test showed there was a statistically significant difference between courtesy and faculty versus staff status, *U* = 2,713.500, *p* = 0.015. The mean rank of faculty was equal to 70.66 and the mean rank of staff was equal to 83.30. The faculty rated courtesy lower than did the staff. It is important to note that there was a significant number of strongly agree selected by both the faculty and staff on the courtesy question. The results showed that 75.73% of the faculty assigned a maximum rating of 5 as compared to 93.33% of the staff who assigned that rating. All of the remaining nine dimensions for Zeithaml et al. (1990), five dimensions for Besterfield et al. (2003), and the overall satisfaction

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dimension were not significant. These analyses are displayed in Tables 19 and 20,

respectively.

Table 18

Mann-Whitney U Test to Determine Difference in Zeithaml et al. (1990) Customer Satisfaction Dimensions and Faculty versus Staff Status

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Access	147	2,547.000	210.557	1.335	0.182
Communication	148	2,369.500	228.215	0.228	0.820
Competence	148	2,431.000	229.462	0.495	0.621
Courtesy	148	2,713.500	163.582	2.421	0.015
Credibility	148	2,537.000	209.735	1.047	0.295
Reliability	148	2,282.500	206.780	-0.169	0.866
Responsiveness	148	2,309.500	210.717	-0.038	0.970
Security	148	2,290.500	204.674	-0.132	0.895
Tangibles	148	2,449.500	235.538	0.560	0.575
Understanding customer	148	2,141.000	222.169	-0.794	0.427

Note. *SE* is the standard error and z is the standardized test statistic.

Table 19

Mann-Whitney U Test to Determine Difference in Besterfield et al. (2003) Customer Satisfaction Dimensions and Faculty versus Staff Status

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Organization	147	2,474.000	220.771	0.811	0.417
Customer Care	148	2,460.000	201.789	0.706	0.480
Communication	146	2,442.500	168.802	1.176	0.240
Front-line people	146	2,280.000	160.019	0.225	0.822
Leadership	144	2,506.000	215.340	1.421	0.155

Note. SE is the standard error and z is the standardized test statistic.

Table 20

Mann-Whitney U Test to Determine Difference in Overall Customer Satisfaction Dimension and Faculty versus Staff Status

Dimension	N	Mann-Whitney U	SE	z	p (2-sided)
Overall Satisfaction	148	2,465.500	171.733	0.862	0.389

Note. *SE* is the standard error and *z* is the standardized test statistic.

Research Question 3

What is the difference in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff?

H$_{03}$ There is no difference in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff.

The Kruskal Wallis *H* test was used to answer this research question rather than an ANOVA due to the skewness of the data. The Kruskal-Wallis *H* test was conducted using an alpha of 0.05. The Kruskal-Wallis *H* test was compared to the differences in 16 customer satisfaction dimensions to determine if there were differences between educational levels of surveyed faculty and staff. All 10 dimensions of Zeithaml et al. (1990) were not significant as shown in Table 21. The five dimensions for Besterfield et al. (2003) and the overall satisfaction dimension were not significant as shown in Tables 22 and 23, respectively.

Table 21

Kruskal-Wallis *H* Test to Determine Difference in Zeithaml et al. (1990) Customer
Satisfaction Dimensions and Educational Level

Dimension	N	H	df	p (2-sided)
Access	147	4.477	4	0.345
Communication	148	4.064	4	0.397
Competence	148	5.268	4	0.261
Courtesy	148	6.391	4	0.172
Credibility	148	3.374	4	0.497
Reliability	148	2.906	4	0.574
Responsiveness	148	6.565	4	0.161
Security	148	6.807	4	0.146
Tangibles	148	6.738	4	0.150
Understanding the customer	148	4.596	4	0.331

Note. *H* is the test statistic for Kruskal-Wallis.

Table 22

*Kruskal-Wallis H Test to Determine Difference in Besterfield et al. (2003) Customer
Satisfaction Dimensions and Educational Level*

Dimension	N	H	df	p (2-sided)
Organization	147	1.995	4	0.737
Customer care	148	1.971	4	0.741
Communication	146	4.371	4	0.358
Front-line people	146	8.239	4	0.083
Leadership	144	5.314	4	0.257

Note. *H* is the test statistic for Kruskal-Wallis.

Table 23

Kruskal-Wallis H Test to Determine Difference in Overall Customer Satisfaction Dimension and Educational Level

Dimension	N	H	df	p (2-sided)
Overall Satisfaction	148	4.023	4	0.403

Note. H is the test statistic for Kruskal-Wallis.

Research Question 4

What is the difference in customer satisfaction using TQM principles in a technology office at a large university based on the age of faculty and staff?

H_{04} There is no difference in customer satisfaction using TQM principles in a technology office at a large university based on the age of faculty and staff.

The Kruskal Wallis H test was used to answer this research question rather than an ANOVA due to the skewness of the data. The Kruskal-Wallis H test was conducted using an alpha of 0.05. The Kruskal-Wallis H test compared the differences in 16 customer satisfaction dimensions to determine if there was a difference based on the age. All of the dimensions of Zeithaml et al. (1990) were not significant as shown in Table 24. All of the five dimensions for Besterfield et al. (2003) and the overall satisfaction dimension were not significant as shown in Tables 25 and 26, respectively.

Table 24

Kruskal-Wallis H Test to Determine Difference in Zeithaml et al. (1990) Customer Satisfaction Dimensions and Age

Dimension	*N*	*H*	*df*	*p* (2-sided)
Access	146	0.872	5	0.972
Communication	147	1.899	5	0.863
Competence	147	3.841	5	0.573
Courtesy	147	3.969	5	0.554
Credibility	147	2.245	5	0.814
Reliability	147	0.749	5	0.980
Responsiveness	147	1.116	5	0.953
Security	147	3.112	5	0.683
Tangibles	147	2.997	5	0.700
Understanding the customer	147	3.250	5	0.661

Note. *H* is the test statistic for Kruskal-Wallis.

Table 25

Kruskal-Wallis H Test to Determine Difference in Besterfield et al. (2003) Customer Satisfaction Dimensions and Age

Dimension	*N*	*H*	*df*	*p* (2-sided)
Organization	147	4.235	5	0.516
Customer care	147	2.844	5	0.724
Communication	145	4.130	5	0.531
Front-line people	145	4.534	5	0.475
Leadership	144	5.296	5	0.381

Note. *H* is the test statistic for Kruskal-Wallis.

Table 26

Kruskal-Wallis H Test to Determine Difference in Overall Customer Satisfaction Dimension and Age

Dimension	*N*	*H*	*df*	*p* (2-sided)
Overall Satisfaction	147	3.015	5	0.698

Note. *H* is the test statistic for Kruskal-Wallis.

Additional Analyses

Data on employees' principal place of employment (Orlando or regional campus) were analyzed for differences in customer satisfaction using the Mann-Whitney *U* test. All of the 16 dimensions were analyzed to determine if there was a difference based on whether the employee was located on the Orlando or a regional campus. None of the 16 dimensions were statistically significant.

To determine if there was a difference in customer satisfaction based on the number of years employed at the college, data were analyzed for differences using the Kruskal-Wallis *H* test. Groupings were: up to one year, 1-2 years, 3-5 years, and over 5 years. The analysis was performed with number of years employed as a nominal variable and customer satisfaction as an ordinal variable. Tangibles was the only dimension that showed a difference, $H(3) = 11.118$, $p = 0.011$. The results of the four groupings based on the number of years employed for tangibles indicated that employees with up to 1 year had the lowest level of customer satisfaction based on the tangibles dimension followed by employees with 1 to 2 years who had the second lowest level of customer satisfaction.

<center>Comparison of Niederriter (1999), Nwankwo (2007), and This Study</center>

One further analysis that was completed was the comparison of results of the present study with those of Niederriter (1999) and Nwankwo (2007). To accomplish this, it was necessary to compare the ranks of each dimension in the three studies.

This study used two questions for each of Zeithaml et al. (1990) 10 dimensions, one question for each of the Besterfield et al. (2003) five dimensions, and one question for the overall satisfaction dimension. The mean scores for each of these 16 dimensions from highest to lowest is shown in Table 27.

Because two other studies have been completed using this survey, it was important to see how the rank of each dimension in this study compared to the rank of each dimension in the two prior studies. Table 28 displays the rankings for the 16 dimensions in each of the three studies. It is important to note that Nwankwo (2007) significantly changed the questions for tangibles. Nwankwo used three questions instead of two as did Niederriter (1999) and only one of Nwankwo's three questions was very similar to Niederriter's. The researcher in the present study made no significant changes in questions to those used in the Niederriter study. The comparison rankings in Table 28 show that in all three studies courtesy was the highest ranking dimension. In addition, the communication (Besterfield et al., 2003) and front-line people dimensions were ranked in the top four dimensions on all three of the surveys.

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Table 27

Study Results of 16 Service Dimensions Rank and Mean Score for this Study

Dimension	Rank	Mean Score
Access	8	4.64
Communication (Zeithaml et al., 1990)	12	4.44
Competence	13	4.43
Courtesy	1	4.83
Credibility	9	4.63
Reliability	6	4.67
Responsiveness	7	4.66
Security	5	4.69
Tangibles	16	3.85
Understanding the customer	11	4.53
Organization	15	4.12
Customer care	10	4.58
Communication (Besterfield et al., 2003)	3	4.73
Front-line people	2	4.79
Leadership	14	4.14
Overall satisfaction	3	4.73

Note. This study had a tie between Communication (Besterfield et al., 2003) and Overall satisfaction.

Table 28

Comparative Ranking of 16 Service Dimensions: Niederriter (1999), Nwankwo (2007) and This Study

| | Comparative Rankings | | |
Dimension	Niederriter (1999)	Nwankwo (2007)	This Study[a] (2014)
Access	6	3	8
Communication (Zeithaml et al., 1990)	13	13	12
Competence	11	15	13
Courtesy	1	1	1
Credibility	10	14	9
Reliability	5	7	6
Responsiveness	9	12	7
Security	2	6	5
Tangibles	16	5	16
Understanding the customer	15	10	11
Organization	14	11	15
Customer care	8	9	10
Communication (Besterfield et al., 2003)	3	2	3
Front-line people	4	4	2
Leadership	12	16	14
Overall satisfaction	7	8	3

Note. This study had a tie between Communication (Besterfield et al., 2003) and Overall satisfaction.
[a]This study had the same mean score for customer satisfaction on both Communication (Besterfield et al., 2003) and Overall satisfaction. The two dimensions were both ranked 3; thus, there was no ranking of 4 in the study.

CHAPTER 5
SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Introduction

Customer satisfaction was less likely to be a concern in the 1980s than it was at the time of the present study. Due to the competition in the education marketplace, leaders have often reorganized to ensure that customer satisfaction is a top priority. It is imperative that leaders have customer service policies that ensure their schools remain successful in the challenging environments that exist throughout the United States and the world in the 21st century. At a university, it is important to understand in detail faculty and staff needs and how to improve customer satisfaction levels.

The purpose of this study was to identify any differences that existed among different demographic characteristics when examining customer satisfaction levels of full-time faculty and staff as related to a technology office. The demographic characteristics that were specifically examined in this study were gender, faculty versus staff status, educational level, and age. During the course of the data analysis, the researcher also investigated differences in customer satisfaction levels for: (a) principal place of employment (Orlando vs. a regional campus) and (b) years of employment in the institution. Differences in the results of two prior studies that used a similar survey were also compared. The findings of the present study have added to the body of knowledge that exists in customer satisfaction levels, specifically of technology offices at higher education institutions.

The study was conducted to determine if there were differences in customer

satisfaction levels with services provided by a technology office when examining the

selected demographics of the faculty and staff who use the office. The following

research questions and null hypothesis were used to guide the study.

1. What is the difference in customer satisfaction using TQM principles in a

   technology office at a large university between different genders of faculty

   and staff?

   H$_{01}$ There is no difference in customer satisfaction using TQM principles in a

   technology office at a large university between different genders of faculty

   and staff.

2. What is the difference in customer satisfaction using TQM principles in a

   technology office at a large university for faculty versus staff?

   H$_{02}$ There is no difference in customer satisfaction using TQM principles in a

   technology office at a large university for faculty versus staff.

3. What is the difference in customer satisfaction using TQM principles in a

   technology office at a large university based on the educational level of

   faculty and staff?

   H$_{03}$ There is no difference in customer satisfaction using TQM principles in a

   technology office at a large university based on the educational level of

   faculty and staff.

4. What is the difference in customer satisfaction using TQM principles in a

   technology office at a large university based on the age of faculty and staff?

   H_{04} There is no difference in customer satisfaction using TQM principles in a

   technology office at a large university based on the age of faculty and staff.

Summary and Discussion of the Findings

The study showed differences in customer satisfaction levels in some of the

demographic characteristics for 10 specific dimensions (Zeithaml et al., 1990), five

specific dimensions (Besterfield et al., 2003), and one overall satisfaction dimension.

The four main demographic variables that were analyzed were gender, faculty versus

staff status, educational level, and age. In addition, respondents' principal location

(Orlando or regional campus), years of employment at the college, and comparative rank

order of dimensions for this and two prior studies using a similar survey were

investigated.

Regarding gender differences, there were no differences in 14 of 16 dimensions

examined. There were differences in customer satisfaction related to gender in two

dimensions, tangibles and understanding the customer. The dimension, tangibles, based

on the work of Zeithaml et al. (1990) was statistically significantly different for males

and females with males having a lower mean rank, $U = 3,814.500$, $p = 0.016$. The

dimension, understanding the customer, based on the work of Zeithaml et al. (1990) was

statistically significantly different for males and females, with males having a lower

mean rank, $U = 3,103.00$, $p = 0.027$. Thus, in this study, males had lower customer

satisfaction of tangibles and understanding the customer as they related to the technology office.

Regarding faculty versus staff differences, with the exception of courtesy, there were no differences in the dimensions. The dimension, courtesy, based on the work of Zeithaml et al. (1990) was statistically significantly different for the faculty and staff with the faculty having a lower mean score, $U = 2,713.500$, $p = 0.015$. The faculty had a lower customer satisfaction level regarding courtesy. This indicated that extra levels of courtesy extended to faculty might be necessary to increase the courtesy dimension of customer satisfaction for the faculty. After further examination, however, the overall rating of courtesy was very high with over 93% of the staff scoring the maximum rating of five and over 75% of the faculty scoring the maximum rating of five. Even though there was a statistically significant difference, it occurred with a significantly skewed rating of both faculty and staff.

Regarding educational level and age, there were no differences in any of the dimensions. There were no differences in customer satisfaction using TQM principles in a technology office at a large university based on the educational level of faculty and staff. There were no differences in customer satisfaction using TQM principles in a technology office at a large university based on the age of faculty and staff.

The null hypotheses were rejected for Research Questions 1 and 2 and retained for Research Questions 3 and 4. The null hypothesis for Research Question 1 that there is no difference in customer satisfaction using TQM principles in a technology office at a large university between different genders of faculty and staff was rejected. The null

hypothesis for Research Question 2 that there is no difference in customer satisfaction using TQM principles in a technology office at a large university for faculty versus staff was also rejected.

Additional analyses beyond the original research questions were performed in regard to principal location and age. Regarding the principal location of employment for faculty and staff (Orlando campus or a regional campus), there were no differences in any of the dimensions. Regarding the number of years employed at the college, there were no differences in any of the dimensions other than tangibles. Employees who were in their first or second year of employment expressed a lower customer satisfaction rating than employees who were at the college for a longer period of time, $H(3) = 11.118$, $p = 0.011$. In the comparison of two prior studies and the present study, all using similar surveys, there was some consistency in regard to customer's perceptions of the dimensions.

The 10 dimensions of Zeithaml et al. (1990) discussed in the study were reduced to five dimensions which became known as the SERVQUAL model. Each of the SERVQUAL dimensions had an approximate percentage of how each dimension influenced the overall customer satisfaction level rating according to Berry et al. (1994). Two of the dimensions, reliability and responsiveness, were typically the two most important categories in the SERVQUAL model, encompassing approximately 54% of the rating customers applied to their overall customer satisfaction levels according to Berry et al. (1994). These two most important dimensions did not show a statistically significant difference in any of the demographic analysis completed in this study. All of the differences were found in the remaining three dimensions of the SERVQUAL model:

assurance, empathy, and tangibles. The SERVQUAL dimension, assurance, included

four of the original 10 dimensions: competence, courtesy, credibility, and security. The

SERVQUAL dimension, empathy, included three of the original 10 dimensions: access,

communication, and understanding the customer. The SERVQUAL dimension,

tangibles, was one of the 10 original dimensions.

The tangibles dimension was statistically significant for gender and was part of

the SERVQUAL tangibles dimension. The dimension, understanding the customer, was

statistically significant for gender and was part of the SERVQUAL empathy dimension.

The dimension, courtesy, was statistically significant for faculty versus staff status and

was part of the SERVQUAL assurance dimension. The dimension, tangibles, was

statistically significant for the number of years employed at the college and was part of

the SERVQUAL tangibles dimension. Thus, three of the five dimensions of the

SERVQUAL model did show, in some aspect of the dimension, a statistically significant

difference for faculty and staff customer satisfaction levels using a technology office.

Several qualitative questions were included in the survey. Survey Question 27

queried respondents as to specific areas of service of the technology office they found

satisfying. The responses were analyzed by the researcher and classified as to which

SERVQUAL dimensions were represented in each response. It is interesting to note that

the dimensions, responsiveness and reliability, were the two most identified dimensions

in the responses as to satisfaction with specific areas of service. Responsiveness and

reliability were also the two most important of the five dimensions according to Berry et

al. (1994), but reliability and responsiveness were reversed in the order of importance in

the comparison of the analysis in the present study to that of Berry et al. (1994). The three lowest ranked customer satisfaction dimensions in this study were assurance, empathy, and tangibles, ranked third, fourth, and fifth, respectively. This rank order was in agreement with that of Berry et al.

It is important to note that each dimension that was found to be different may have a different impact on customers. In this study, the two most important dimensions based on the satisfaction levels of faculty and staff were responsiveness and reliability. The two most important SERVQUAL dimensions, according to Berry et al. (1994), were reliability and responsiveness. Thus, the two most important SERVQUAL dimensions according to Berry et al. and the faculty and staff qualitative responses on what they found most satisfying in this survey showed no statistical differences in all demographics analyzed.

The study had a qualitative question on specific areas respondents believed needed improvement. Each of the answers were grouped into categories determined by the researcher. The most frequent response was simply that no improvements were needed. The second most common response was that a larger staff was needed. The third most common response was that more office space or larger reception area was needed. It was clear from this study that faculty and staff expected a more desirable reception area when entering a technology suite. There were a significant number of respondents who identified the reception area as needing improvement due to the very small technology office reception area. It is important to have a desirable area to welcome faculty and staff in a technology office suite. New employees probably tend to

stop in a technology office more often and see the reception area. This could explain the

lower scores for tangibles by new employees. A very limited reception area can be a

problem for faculty and staff, and in this study it was clear that the reception area did not

meet the expectation levels.

Implications for Practice

Three of the survey questions had mean scores of 4.10 or lower. The lowest-rated

score was regarding an appropriate reception area. Based on the results of the study, the

issue will be addressed by reallocating more space to the reception portion of the office to

create a more welcoming atmosphere. The second lowest rated score was related to a

sufficient number of employees to meet the needs of faculty and staff. The technology

staff has been reduced due to a lower budget and remains a concern.

The third lowest rated question was related to one-on-one training. One-on-one

technology training is currently available at the college, but some college faculty and

staff may not be aware of this special one-on-one training. The strategy used to address

this issue will be to send additional emails each year to announce the availability of such

training.

There were a few differences that were revealed in this study regarding

demographics related to customer satisfaction levels for specific dimensions. A

technology director should conduct a yearly survey that consists of questions which

measure important customer satisfaction levels. Each year the results can be examined to

see if any changes that were put in place in the course of a year altered customer

satisfaction levels of the faculty and staff.

It was evident from this study that customer satisfaction measures can determine

actions that need to be taken to improve customer service. Surveys should be

administered yearly and benchmarks should be established to measure changes of

customer satisfaction levels from year to year. Survey questions with lower-rated scores

should be carefully reviewed to determine what, if any, strategies need to be changed. It

was clear from this study that survey data are extremely valuable and must be gathered

and analyzed systematically so effective benchmarks are established to improve the

customer satisfaction levels of an organization.

Recommendations for Future Research

There are several recommendations that can be made from the findings of this

study. This study, and two other studies also using the Niederriter (1999) survey,

provided a better understanding of different customer satisfaction dimensions ratings

based on specific questions. A future study designed to examine the 10 original

SERVQUAL dimensions using the definitions of each dimension could be useful in

learning more about those dimensions that are lower rated. This would allow for a

further confirmation of lower-rated dimensions.

A future study might involve understanding the differences between customers

involved in technology support requests and customers not involved in the decision

making regarding these requests. It might be critical to keep end users involved during

the technology support process which can ultimately lead to a win-win solution for everyone in the organization. The customers would need to classify their level of involvement on their requests as part of the survey.

Future research could be focused on better understanding what is needed to improve the customer satisfaction level of some of the lower-rated dimensions in this study. Using the results of the comparative service dimension rankings (Table 28) of Niederriter (1999), Nwankwo (2007) and this study in future research could lead to better understanding as to what is needed to improve the lower-rated service dimensions. Because the present study had skewed data in many instances, it was difficult to determine which aspects of a dimension might involve specific training strategies for technology staff or adjustments by a director of a technology office.

The results of this study and prior studies by Niederriter (1999) and Nwankwo (2007) had some dimensions that were consistently rated low, and effort should be made on improving these lower rated dimensions. Specifically, future research could be concentrated on specific survey questions that had very low mean scores. For example, one survey question related to the competency dimension on the knowledge of staff had a mean score of 4.7. The second survey question relating to the competency dimension on one-to-one training had a mean score of 4.1. In this particular case, it was the one-to-one training concern that reduced customer satisfaction. Research could be conducted using a survey that focuses on the lowest-rated questions and queries customers on a very specific aspect of the service about what is needed to have a higher customer satisfaction level. As mentioned earlier, the reception area question on tangibles generated a low

rating. However, a question could ask what is the minimum space needed for an appropriate reception area or what would you do to change the current reception area in the technology office?

Future research could focus on differences in the degree of technical competence of a respondent and their customer satisfaction level. The demographic information in this study included the highest educational level, but didn't include any measure on the respondent's technical experience. A future study could have the respondent self-rate their level of technical skills. In addition, the survey could include a few questions asking the respondent to rate their knowledge level of software packages. This information would let a researcher determine if there are any differences in a faculty or staff member's technical competence and their customer satisfaction levels of a technology support office.

APPENDIX A
PERMISSION TO USE NIEDERRITER (1999) SURVEY

June 20, 2013
Laurence H. Jaffe
Doctoral Student
College of Education and Human Performance
University of Central Florida
4000 Central Florida Boulevard
Orlando, Florida 32816

Dr. Sandy Niederriter
Pima Community College, NW
7600 North Shannon Road
Tucson, Arizona 85709-7050

Dear Dr. Niederriter:

As a doctoral student at the University of Central Florida, I am writing a dissertation for my Ed.D. Under the direction of Dr. Kenneth Murray, my dissertation is tentatively titled "Evaluating Faculty and Staff Customer Satisfaction of a Technology Support Office in a Large College in Florida".

This letter is to ask your permission to use and reprint your survey instrument from "Assessing Customer Satisfaction of Campus Information Technology Departments in a Community College Setting Using TQM Principles" in my dissertation for my Ed.D. The instrument is the campus computer services department survey shown on pages 140-142 and categories by dimensions on page 148 of your dissertation. I would like to use your survey as part of my dissertation and below would be specific terms:

- The requested permission would be for use only for my current dissertation for my Ed.D. and will not be used for any other purposes.
- Your original survey and categories by dimensions will be included in my dissertation and denoted as your survey from your dissertation in 1999. If the survey is modified, there also will be the modified survey and clearly stated to the reader that it is a modified survey by myself.
- This letter with signatures would be included in my Ed.D. dissertation.

If these are acceptable terms, please sign and date below. I would be extremely appreciative if you allowed me to use this outstanding survey that you developed as part of your dissertation in 1999. Your dissertation was very insightful and I hope for the opportunity to use your survey as part of my dissertation.

Sincerely,

Laurence H. Jaffe

Laurence H. Jaffe

I grant my permission to use the materials described above.

Dr. Sandy Niederriter   6-27-13

Signature of Dr. Sandy Niederriter   Date

APPENDIX B
NIEDERRITER (1999) SURVEY

<div style="border: 2px solid black; text-align: center;">

CAMPUS COMPUTER SERVICES
DEPARTMENT SURVEY

</div>

This survey is designed to evaluate customer satisfaction of Pima Community College Campus Computer Services Departments. Its focus is to determine specific areas of customer satisfaction as well as the assessing Campus Computer Services Departments' strengths and finding out about its weaknesses.

The questionnaire consists of two sections. The first section contains information about yourself and the second section contains the customer satisfaction questions. Please complete both sections of this questionnaire. You may use either a pencil or pen. Upon completion of this questionnaire, please return it in the enclosed, inter-campus envelope. This survey should take you approximately 10 minutes to complete. Your participation is greatly appreciated. (It is assumed that if you complete and return this survey you have given your consent to participate.)

Demographics

Please answer each question by making an "x" or a "✔" by the appropriate response.

A. Gender:

   ① _____ Male
   ② _____ Female

B. Position in the College:

   ① _____ Full-time Faculty
   ② _____ Full-time Staff

C. Ethnic Membership
(Please check the one you most closely identify with.)

   ① _____ American Indian or Alaskan Native
   ② _____ Black, Non-Hispanic
   ③ _____ Asian or Pacific Islander
   ④ _____ Hispanic
   ⑤ _____ White, Non-Hispanic
   ⑥ _____ Other

D. Campus:

   ① _____ West Campus
   ② _____ Downtown Campus
   ③ _____ East Campus
   ④ _____ Desert Vista Campus

E. Years employed by the College:

   ① _____ One year or less
   ② _____ 1-2 years
   ③ _____ 3-5 years
   ④ _____ 6-10 years
   ④ _____ 11 or more years

Customer Satisfaction Questions

Please answer each question by determining the correct response as it applies to you. Fill in or mark an "x" or a "✔" in the appropriate check box for each question. Following the questions, there is a space for your comments. Please feel free to write any comments you may wish to contribute in the space provided.

> **Please note: Answer all questions as they apply to your *Campus* Computer Services department and staff.**

1. The computer services department meets my computing expectations.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

2. The computer services staff is courteous.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

3. The computer services department provides dependable service.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

4. The computer services department has a central contact point for requesting services.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

5. The computer services staff promptly returns my phone calls.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

6. The computer services department is never too busy to give me personal attention.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

7. If my computing problem cannot be solved immediately, the computer services staff gives me progress reports.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

8. The computer service department delivers what it promises.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

9. The computer services department has a designated reception area.
   ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

10. The computer services staff shows an understanding of my support needs.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

11. The computer service department provides prompt service.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

12. The computer services staff is knowledgeable.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

13. The computer services staff is available to me a sufficient number of hours each day to meet my computing needs.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

14. The computer services staff explains what action they will take to resolve my computer problems.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

15. I trust the computer services staff to work on my office computer in my office when I am not present.
    ☐ *Strongly Agree*   ☐ *Agree*   ☐ *Undecided*   ☐ *Disagree*   ☐ *Strongly Disagree*

16. The computer services department provides the similar service to all its customers.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

17. The computer services staff are approachable.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

18. The computer services department provides direction for technology advancement on my campus.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

19. The computer services staff offers effective one-on-one training.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

20. The computer services staff treats me with respect.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

21. The computer services department has a credible reputation.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

22. The computer service department is generally consistent in their delivery of services.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

23. I have no doubts about the services I receive.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

24. The computer services department employs a sufficient number of personnel to meet my computing needs.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

25. The computer staff is patient when listening to my computing questions.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

26. Overall, I am satisfied with the quality of service provided by my campus computer services department.
   □ *Strongly Agree*　□ *Agree*　□ *Undecided*　□ *Disagree*　□ *Strongly Disagree*

---

27. Please list specific areas of services provided by your computer services department that you find satisfying. You may use the back of this survey for additional comments.

28. Please list specific areas of services provided by your computer services department that you find are in need of improvement. You may use the back of this survey for additional comments.

29. Please use this space to enter any comments regarding your campus computer services department you may wish to make. You may use the back of this survey for additional comments.

Thank you for your participation and cooperation in completing this survey.

APPENDIX C
NIEDERRITER (1999) QUALITY SERVICE DIMENSIONS

SURVEY QUESTIONS CATEGORIZED BY DIMENSION

Quality Service Dimensions as identified by Zeithaml et al. (1990).

DIMENSION	QUESTION FROM SURVEY
Access	4. The computer services department has a central contact point for requesting services. 13. The computer services staff is available to me sufficient number of hours each day to meet my computing needs.
Communication	7. If my computing problem cannot be solved immediately, the computer services staff gives me progress reports. 14. The computer services staff explains what action they will take to resolve my computer problems.
Competence	12. The computer services staff is knowledgeable. 19. The computer services staff offers effective one-on-one training.
Courtesy	2. The computer services staff is courteous. 20. The computer services staff treats me with respect.
Credibility	8. The computer service department delivers what it promises. 21. The computer services department has a credible reputation.
Reliability	3. The computer services department provides dependable service. 22. The computer service department is generally consistent in their delivery of services.
Responsiveness	5. The computer services staff promptly returns my phone calls. 11. The computer service department provides prompt service.
Security	15. I trust the computer services staff to work on my office computer in my office when I am not present. 23. I have no doubts about the services I receive.
Tangibles	9. The computer services department has a designated reception area. 24. The computer services department employs a sufficient number of personnel to meet my computing needs.
Understanding the Customer	6. The computer services department is never too busy to give me personal attention. 10. The computer services staff shows an understanding of my support needs.

Quality Service Dimensions as identified by Besterfield et al. (1995).

DIMENSION	QUESTION FROM SURVEY
Organization	16. The computer services department provides the similar service to all its customers.
Customer Care	1. The computer services department meets my computing expectations.
Communication	25. The computer staff is patient when listening to my computing questions.
Front-line People	17. The computer services staff are approachable.
Leadership	18. The computer services department provides direction for technology advancement on my campus.

APPENDIX D
UNIVERSITY OF CENTRAL FLORIDA IRB REVIEW

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Laurence H. Jaffe**

Date: **August 13, 2013**

Dear Researcher:

On 8/13/2013, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	EVALUATING FACULTY AND STAFF CUSTOMER SATISFACTION OF A TECHNOLOGY SUPPORT OFFICE IN A LARGE COLLEGE IN FLORIDA
Investigator:	Laurence H Jaffe
IRB Number:	SBE-13-09545
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 08/13/2013 10:54:39 AM EDT

IRB Coordinator

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University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Laurence H. Jaffe**

Date: **February 10, 2014**

Dear Researcher:

On 2/10/2014, the IRB approved the following minor modification to human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Modification Type:	The study title is being changed: replacing the word "COLLEGE" with "UNIVERSITY." The new title is below.
Project Title:	EVALUATING FACULTY AND STAFF CUSTOMER SATISFACTION OF A TECHNOLOGY SUPPORT OFFICE IN A LARGE UNIVERSITY IN FLORIDA
Investigator:	Laurence H Jaffe
IRB Number:	SBE-13-09545
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/10/2014 08:26:40 AM EST

IRB Coordinator

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APPENDIX E
INFORMED CONSENT FOR IRB

EXPLANATION OF RESEARCH

Title of Project: Evaluating Faculty and Staff Customer Satisfaction of a Technology Support Office in a Large College in Florida

Principal Investigator: Laurence H. Jaffe, M.B.A., M.S., Ed.S.

Faculty Supervisor: Kenneth T. Murray, J.D., Ph.D.

You are being invited to take part in a research study. Whether you take part is up to you. The purpose of this study is to determine faculty and staff customer satisfaction levels of a technology office. You will be asked to complete an on-line survey including six demographic questions, 26 Likert scale questions and three open-ended questions. You do not have to answer every survey question. The on-line survey should take about ten minutes to complete. You must be 18 years of age or older to take part in this research study.

Please click the link below to access the online survey (or copy and paste the URL below into your internet browser):

LINK TO QUALTRICS SURVEY

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints, contact Laurence Jaffe, College of Education and Human Performance, (407) 823-6047 or by email at jaffe@ucf.edu or Dr. Kenneth Murray, Faculty Supervisor, College of Education and Human Performance by email at Kenneth.Murray@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

APPENDIX F
CUSTOMER SATISFACTION SURVEY

DEMOGRAPHICS

SURVEY. Thank for you agreeing to participate. Please answer the six demographic questions followed by 29 survey questions.

Question 1. Gender:
- Male
- Female

Question 2. Position in the College of Education and Human Performance:
- Full-Time Faculty (including 12mo faculty, 9mo faculty, post doc)
- Full-Time Staff (including A&P, USPS)
- Other (please describe below)

Question 3. Principal Place of Employment:
- UCF Main Campus (including grant faculty/staff working off-site)
- UCF Regional Campus
- Other (please describe below)

Question 4. Highest educational level completed as of this survey is:
- Completed High School Diploma or GED
- Completed Associates Degree or Technical Certification
- Completed Four-year Degree
- Completed Master's Degree
- Completed Doctoral Degree or other Terminal Degree

Question 5. Age:
- less than 30
- 30-39
- 40-49
- 50-59
- 60-69
- 70 and over

Question 6. Years employed by the College of Education and Human Performance:
- Up to 1 year
- 1-2 years
- 3-5 years
- Over 5 years

SURVEY. Please answer the 29 survey questions below and this will complete the survey.

Q1. The CEDHP Technology department meets my computing expectations.
• Strongly Disagree
• Disagree
• Undecided
• Agree
• Strongly Agree

Q2. The CEDHP Technology department staff is courteous.
• Strongly Disagree
• Disagree
• Undecided
• Agree
• Strongly Agree

Q3. The CEDHP Technology department provides dependable service.
• Strongly Disagree
• Disagree
• Undecided
• Agree
• Strongly Agree

Q4. The CEDHP Technology department has a central contact point for requesting services.
• Strongly Disagree
• Disagree
• Undecided
• Agree
• Strongly Agree

Q5. The CEDHP Technology department staff promptly returns my phone calls and emails.
• Strongly Disagree
• Disagree
• Undecided
• Agree
• Strongly Agree

Q6. The CEDHP Technology department is never too busy to give me personal attention.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q7. If my computing problem cannot be solved immediately, the computer services staff gives me progress reports.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q8. The CEDHP Technology department delivers what it promises.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q9. The CEDHP Technology department has an appropriate reception area.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q10. The CEDHP Technology department shows an understanding of my support needs.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q11. The CEDHP Technology department provides prompt service.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q12. The CEDHP Technology department staff is knowledgeable.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q13. The CEDHP Technology department staff is available to me a sufficient number of hours each day to meet my computing needs.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q14. The CEDHP Technology department staff explains what action they will take to resolve my computer problems.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q15. I trust the CEDHP Technology department staff to work on my office computer in my office when I am not present.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q16. The CEDHP Technology department provides similar service to all its customers.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q17. The CEDHP Technology department staff are approachable.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q18. The CEDHP Technology department provides direction for technology advancement on my campus.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q19. The CEDHP Technology department staff offers effective one-on-one training.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q20. The CEDHP Technology department staff treats me with respect.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q21. The CEDHP Technology department has a credible reputation.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q22. The CEDHP Technology department is generally consistent in their delivery of services.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q23. I have no doubt about the services I receive.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q24. The CEDHP Technology department employs a sufficient number of personnel to meet my computing needs.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q25. The CEDHP Technology department staff is patient when listening to my computing questions.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q26. Overall, I am satisfied with the quality of service provided by the CEDHP Technology department.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Q27. Please list specific areas of services provided by the CEDHP Technology department staff that you find satisfying.

Q28. Please list specific areas of services provided by the CEDHP Technology department that you find are in need of improvement.

Q29. Please use this space to enter any comments regarding the CEDHP Technology department that you may wish to make.

APPENDIX G
QUALITY SERVICE DIMENSIONS BY QUESTION

SERVICE QUALITY DIMENSIONS FROM ZEITHAML ET AL. (1990)
AND ASSOCIATED QUESTIONS ON NIEDERRITER (1999) SURVEY
WITH MODIFICATIONS

Dimension	Question
Access	Q4. The CEDHP Technology department has a central contact point for requesting services.
	Q13. The CEDHP Technology department staff is available to me a sufficient number of hours each day to meet my computing needs.
Communication	Q7. If my computing problem cannot be solved immediately, the computer services staff gives me progress reports.
	Q14. The CEDHP Technology department staff explains what action they will take to resolve my computer problems.
Competence	Q12. The CEDHP Technology department staff is knowledgeable.
	Q19. The CEDHP Technology department staff offers effective one-on-one training.
Courtesy	Q2. The CEDHP Technology department staff is courteous.
	Q20. The CEDHP Technology department staff treats me with respect.
Credibility	Q8. The CEDHP Technology department delivers what it promises.
	Q21. The CEDHP Technology department has a credible reputation.
Reliability	Q3. The CEDHP Technology department provides dependable service.
	Q22. The CEDHP Technology department is generally consistent in their delivery of services.
Responsiveness	Q5. The CEDHP Technology department staff promptly returns my phone calls and emails.
	Q11. The CEDHP Technology department provides prompt service.
Security	Q15. I trust the CEDHP Technology department staff to work on my office computer in my office when I am not present.
	Q23.I have no doubt about the services I receive.
Tangibles	Q9. The CEDHP Technology department has an appropriate reception area.
	Q24. The CEDHP Technology department employs a sufficient number of personnel to meet my computing needs.
Understanding the Customer	Q6. The CEDHP Technology department is never too busy to give me personal attention.
	Q10. The CEDHP Technology department shows an understanding of my support needs.

SERVICE QUALITY DIMENSIONS FROM BESTERFIELD ET AL. (2003)
AND ASSOCIATED QUESTIONS ON NIEDERRITER (1999) SURVEY
WITH MODIFICATIONS

Dimension	Question
Organization	Q16. The CEDHP Technology department provides similar service to all its customers.
Customer Care	Q1. The CEDHP Technology department meets my computing expectations.
Communication	Q25. The CEDHP Technology department staff is patient when listening to my computing questions.
Front-Line People	Q17. The CEDHP Technology department staff are approachable.
Leadership	Q18. The CEDHP Technology department provides direction for technology advancement on my campus.

SERVICE QUALITY DIMENSION OVERALL SATISFACTION
AND ASSOCIATED QUESTION ON NIEDERRITER (1999) SURVEY
WITH MODIFICATIONS

Dimension	Question
Overall Satisfaction	Q26. Overall, I am satisfied with the quality of service provided by the CEDHP Technology department.

APPENDIX H
ALPHABETIZED RESPONSES TO SURVEY QUESTION 29

although understandably limited by budget more employees with a better understanding of all the systems/services used in CED would be ideal

An efficient and effective department with excellent service delivery skills - thank you for all you do

As I said, I find all areas of services provided by the CEDHP Technology Department staff highly satisfying. They are fast, efficient and courteous. They are responsive to faculty needs and understanding of faculty concerns. They provide helpful suggestions and immediate feedback. They are responsive, courteous and professional. They are a most valuable part of the College of Education and are a most attentive to the needs of students, staff and faculty, I have nothing but high praise for the work they do and will continue to do to enhance the work of our college.

CEDHP Technology department is great. I know with limited personnel, it's difficult and may be impossible to help faculty with personal laptops and computing questions. However, providing some help in these areas would be nice.

Considering the limited staff they do an amazing job. I have never had a problem with any of my needs. Give Larry a raise.

Excellent job. Especially with the limited funds you have!

Excellent service; a real asset to the College

For a group that is underfunded and provided with inadequate space, they do a great job. Taking web design and maintenance out of the department complicates some activities.

Friendly, knowledgeable, courteous staff who is always willing to assist.

Good up the good work

Great job guys! Keep up the good work!

Great staff. Knowledgable, courteous, professional, and fast!

Great team! Could use a bigger office area, seems cramped.

I always feel comfortable calling for assistance. They are very friendly and helpful!

I am extremely satisfied with the service we receive from the CEDHP Technology department. They are always friendly, highly responsive and meet the individual needs of my staff.

I am proud to have Larry as a colleague.

I appreciate all that the office does. I try and tell them as often as possible.

I appreciate the fine work that the staff in the CEDHP Technology department do. We are truly fortunate to have the high quality technology leadership and staff in the College of Education and Human Performance.

I appreciate your friendliness - and that you never treat my questions or problems as insignificant.

I couldn't do my job if it wasn't for the tech team.

I have always received fast and competent service.

I have been in the college through many technology department personnel changes. The current director changed everything in positive ways. The staff is always respectful, helpful and hard-working. The director models all if these equalities and expects them from his staff. The college is fortunate to gave the CEDHP Technology Department.

I like the professionalism of the tech team

I love Larry Jaffe and his crew. They are the best, and we are extremely fortunate to have him and the employees he has hired. When I talk about them to colleagues from other colleges around campus, they are amazed at the level of service they offer. Best of luck with the research.

I love that the Tech Dept is not only knowledgeable and savvy, but they are never condescending or know-it-alls , even when I ask a dumb question or haven't thought of an easy way to troubleshoot the problem I am having. Being kind, approachable, and patient means so much to faculty and staff, sometimes over technical skills and knowledge, even. / The tone of this office is always RIGHT!!

I think the Technology department does an excellent job supporting the CEDHP

It is always a "positive" experence...so unusual in todays culture

It would be very helpful to give the option to replace full-time faculty office computers with laptops.

keep up the good work!

Larry Jaffe and his staff are pleasant and accommodating. He is an outstanding leader and always ready to assist his customers.

My undecided comments - have never had the problem so can't agree or disagree

Need more resources -- a budgetary issue, not a staff issue.

Nevr had a problem that they could not fix immediately.

Since I teach in other buildings on the campus. I would like to see the same level of service provided in these Colleges.

Thank you for all you do!!

Thank you for the excellent support and service. Having worked at a place where tech support was centralized by the University having direct support in the College is something I highly value and is one of the reasons I would not want to leave UCF.

Thank you.

Thanks CEDHP Technology department!

Thanks for all you do!

The CEDHP Tech Department is a very resourceful group of professionals. They provide great service and will keep you in the loop when service may be delayed.

The CEDHP Technology department demonstrates professionalism and provides excellent services.

The CEDHP Technology department goes above and beyond to meet the needs of our faculty and staff. They are greatly appreciated.

The CEDHP Technology department has always been very professional and extremely knowledgeable in my personal experience.

THE CEDHP Technology department is knowledgeable and helpful to all faculty and staff and I have had only positive experiences with them.

The CEDHP Technology department is made up of smart and hardworking individuals. They are also very friendly. They make a great team and are very good at what they do.

The leadership and staff, working with restricted funds and manpower, are exceptional!

The leadership of this department really shines through in all of the staff's endeavors. The Director of Technology and Facilities is always there and it is evident he is busy in his efforts to make sure everything is happening according to plan. I have seen him provide great guidance to his staff and faculty members. Even when things have not gone according to plan, like the time the technology office was flooded, they worked as a team, around the clock, to ensure the department was still up, running and supporting our endeavors. Importantly, in spite of the flood crisis their smiles and friendly demeanors did not falter. Furthermore, I, as a faculty member, never felt a flicker of fear in wondering if they would be able to support me through the flood. It was just business as usual, except for seeing the machinery needed to clean up the flood when one walked into their office. This kind of dedication deserves an award.

The staff are always courteous and willing to assist. No complaints.

The staff is always professioanl.

The staff is very accommodating, they work after hours events, they are quick in responding, and they are always willing to help.

There have been huge and marked improvements in the CEDHP Technology department over the years I've been with the College and this has primarily to do with leadership of the office, staffing of the office, and delivery of services. All "A+"!

They do a fantastic job. Keep up the great work!

They do excellant job

Very helpful team

Very pleased with the service and staff.

We need to continue to update laptops that can be checked out to faculty for long-term use.

We would like to be able to bring personal equipment to get checked or services by the cedhp tech office. I am willing to pay to get it done, and would be convenient because I rather pay them , who I trust, than a retail store.

Whenever I needed assistance it was provided in a timely and courteous manner.

You and your staff do a tremendous job!

You do a good job!..Questions are always answered.

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