An Examination of Possible Relationships between Service Quality and Brand Equity in Online Higher Education

Dissertation

Submitted to Northcentral University

Graduate Faculty of the School of Business and Technology
in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

by

CHARLES M. JARRELL

Prescott Valley, Arizona
July 2012

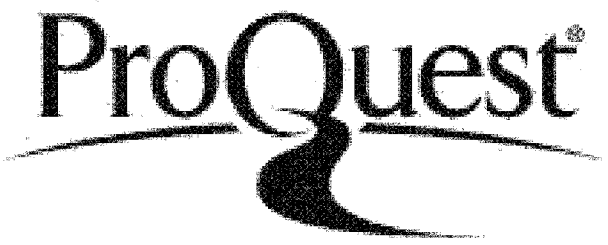
UMI Number: 3529670

All rights reserved

INFORMATION TO ALL USERS
The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript
and there are missing pages, these will be noted. Also, if material had to be removed,
a note will indicate the deletion.

UMI 3529670
Published by ProQuest LLC 2012. Copyright in the Dissertation held by the Author.
Microform Edition © ProQuest LLC.
All rights reserved. This work is protected against
unauthorized copying under Title 17, United States Code.



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Copyright 2012

Charles M. Jarrell

APPROVAL PAGE

An Examination of Possible Relationships between Service Quality and Brand Equity in Online Higher Education

by

Charles M. Jarrell

Approved by:

Kenneth D. Gossett PhD. 7/5/2012

Chair: Dr. Kenneth Gossett, Ph.D. Date

Member: Dr. Mayuresh Kelkar, Ph.D.

Member: Dr. Gyongyi Fogel, D.B.A.

Certified by:

7/22/12

School Dean: Dr. A. Lee Smith, Ph.D. Date

Abstract

Researchers and marketers lack information about possible relationships between service quality and online brand equity in intangible and often undifferentiated service businesses. The services sector of the economy is large with 72% of the economic output and 80% of the workers in the United States in 2007. Within the services sector, Internet sales of consumer services in the United States were only 3.9% of total services revenue but grew by 14.1% from 2007 to 2008. This quantitative study was an examination of a new model and possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality and the Online Retail/Service (ORS) Model of brand equity. The service environment was online courses and programs at colleges and universities in the United States. College administrators and marketers have struggled to articulate and differentiate their online brands in the intangible and often undifferentiated educational services market. The research design was a single-stage, cross-sectional survey using a non-probability, proportional quota sample The 364 qualified responses were assigned to six age and gender categories to form a quota sample (n = 177) proportional to the population of college and university students in the United States. Analysis of the data demonstrated a strong positive correlation between service quality and brand equity, $r(176) = 0.88, p = 0.000$. Strong positive correlation also existed between price and brand equity, $r_s(176) = 0.68, p = 0.000$. A small mediating effect of brand loyalty existed in the relationship between service quality and brand equity, $r_{ab,c}(176) = 0.81, p = 0.000$. Satisfaction had a moderate mediating effect on the relationship between service quality and brand equity, $r_{ab,c}$ (176) = 0.70, $p = 0.000$, and satisfaction had a strong mediating

effect on the relationship between price and brand equity, $r_{ab,c}(176) = 0.18, p = 0.000$. No moderating effects existed between service quality and brand equity based on the respondent's characteristics, including age and gender. Limitations of the study included the inability to project results to all colleges and universities in the United States or other service businesses due to the use of a convenience sample. Researchers, marketers, and consumers will benefit from information from the study that filled a gap in the research literature and might be used to improve support services and brand equity in online businesses.

ACKNOWLEDGEMENTS

I give thanks and praise to God who is the Author of life and who provided me with the intellect and curiosity needed during this study.

I appreciate the support of the many friends and colleagues who have provided advice and encouragement during my doctoral studies and dissertation process. Particular thanks go out to Dr. Claudia Santin and Dr. Robert Branch. I am proud to call them friends and colleagues. Thanks go out to Dr. Melissa Jarrell and Dr. Joshua Ozymy, who read and commented on my dissertation proposal and provided advice on quantitative methods.

I also thank Dr. Kenneth Gossett, my dissertation committee chair, and the other members of the committee, Dr. Mayuresh Kelkar and Dr. Gyongyi Fogel, for their advice and support as I conducted my dissertation study. Thank you to Dr. Laura Pogue and Dr. Jeffrey Boyce, both of whom served on my dissertation committee and helped during the development of this study.

Finally, I thank my mother, Betty Sanders Jarrell, who has lived with me during the course of this study. Mom is a former teacher and has been a source of encouragement. I come from a family of educators, and especially remember my late father, Millard G. Jarrell, who taught high school chemistry, and my late aunt, Beatrice Jarrell Trump, who taught junior high English. My parents and my aunt have been constant inspirations throughout my life.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

In 2007, the services sector of the economy in the United States was more than 72% of the economic output, and organizations that provided services to consumers and other businesses employed more than 80% of workers (U.S. Census Bureau, 2008). Internet sales of consumer services in the United States were only 3.9% of total services revenue but grew by 14.1% from 2007 to 2008 (U.S. Census Bureau, 2010). Service quality is an attitude that consumers have that reflects beliefs, feelings, and behavioral intentions toward a service supplier (Parasuraman, Zeithaml, & Berry, 1994). Studies in a variety of settings discovered relationships among service quality, satisfaction, and brand loyalty (Baumann, Burton, Elliott, & Kehr, 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007; Tsoukatos & Rand, 2006; Ugboma, Ibe, & Ogwude, 2004; Wolde-Rufael, 2001). Service quality was a key variable among consumers as they developed trust in Internet web sites (Alzola & Robaina, 2005; Chen, 2003; Gefen, 2002; Parasuraman, Zeithaml, & Malhotra, 2005).

A brand is a product or service with added dimensions that differentiate it from competitors seeking to satisfy the same consumer needs (Kotler & Keller, 2006). Brand equity is the value that results from consumers' associations with a brand or the image of a brand and other constructs related to quality and brand loyalty (Aaker, 1991). Brand equity is a marketing asset that is hard to measure in financial terms but encompasses concepts of reputation, goodwill, or customer satisfaction (Ambler, 1997; Ambler, 2000). According to Ambler (2000, p. 5), "Brand equity, for many companies, is by far their biggest and most valuable asset." Many brand equity researchers have focused on products but not services (Ambler, 1997; Arora & Stoner, 1996; Christodoulides & de

Chernatony, 2004). Managers in service industries with high credence qualities, such as medical diagnosis, legal advice, and educational services, might benefit from further brand equity research because consumers buy services based on trust in the service provider (Arora & Stoner, 1996). Researchers noted that high levels of brand equity on the Internet might be obtained by relationship-building communications and focusing on services offered through the web sites (Christodoulides & de Chernatony, 2004; Page & Lepkowska-White, 2002).

While researchers have examined the concepts of service quality and brand equity, evidence from a literature review revealed that researchers have not published about the possible relationships between service quality and brand equity in online service businesses. Online businesses are a fast-growing segment of the service economy in the United States (U.S. Census Bureau, 2008; U.S. Census Bureau, 2010). Researchers might benefit from information that fills a gap in the research literature. Marketers might benefit from a better understanding of how the quality of services offered by their online businesses affects consumers' attitudes toward their brands and intentions to purchase their products or services.

Chapter 1 is an introduction of the problem and purpose statements for the research study. The theoretical underpinnings of service quality and online brand equity are summarized, and a new model that might demonstrate relationships between the two variables is presented. The chapter is a summary of the possible practical interest of the study to administrators and marketers in online higher education. Finally, Chapter 1 offers a description of the research questions and hypotheses and discusses the theoretical model and variables for the quantitative study of consumer attitudes about service quality

and online brand equity.

Background

Service quality is the difference between the expectations and perceptions of the actual service delivered (Gronroos, 1984; Parasuraman et al., 1985). Furthermore, service quality is an attitude that consumers have that reflects beliefs, feelings, and behavioral intentions toward a service supplier (Parasuraman et al., 1994). Researchers have continued to disagree about the definition and measurement of service quality as a perceptual construct or transaction-specific outcome (Coulthard, 2004; Cronin & Taylor, 1994; Parasuraman et al., 1994). In spite of the conflict, many researchers have modified the 22-item SERVQUAL scale and used the scale to measure service quality in retail and online settings (Baumann et al., 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007; Ugboma et al., 2004; Wolde-Rufael, 2001).

Brand equity is a strong differential advantage accruing to a brand and allowing greater future sales or profit margins based on positive associations and behaviors by the brand's customers, distribution partners, and other stakeholders (Srivastava & Shocker, 1991). Researchers have examined brand equity in products (Faircloth, Capella, & Alford, 2001) and in service businesses, including medical diagnosis, legal advice, and financial services (Arora & Stoner, 1996; de Chernatony & Riley, 1999). Brand equity is difficult to measure due to the lack of agreement about the definition of the concept (Ambler, 2000; Ambler, Kokkinaki, & Puntoni, 2004; Berry, 2000; Keller, 2001). The Online Retail/Service (ORS) Brand Equity Model is a method of measuring brand equity for Internet-based service and retail businesses (Christodoulides, de Chernatony, Furrer, Shiu, & Abimbola, 2006). The ORS scale is a 12-item scale with valid and reliable

measures of the five dimensions among respondents who had made low-involvement online purchases of music CDs, books, DVDs, and clothing (Christodoulides et al., 2006). Researchers have not published results that validated the ORS brand equity model or used the model to measure brand equity in other online service industries.

The study was quantitative research to examine possible relationships between service quality and brand equity in an online business. Online services include web-based information, web forms, email, and other communications. Human support services personnel use email, the telephone, and face-to-face interactions to facilitate transactions and satisfy consumer needs. The study examined a new model of possible relationships between service quality and online brand equity using the SERVQUAL scale and the ORS brand equity model.

Colleges and universities are businesses offering intangible educational services, including online courses and programs (Zeithaml, Bitner, & Gremler, 2009). In the fall semester of 2008, more than 18.2 million students attended classes at approximately 4,000 colleges and universities in the United States (Digest of Education Statistics, 2009; Rhodes, 2006). More and more students are seeking online courses and degree programs and paying a wide range of tuition and fees for their college or university educations. The number of students enrolled in one or more online courses exceeded 4.6 million in 2008-09, a ten-fold increase in only six years (Carnevale, 2005; New Study, 2010). Researchers attributed the growth in online higher education to the elimination of time and space barriers for students and reduction of costs for educational institutions (Overton, 2008; Tanner, Noser, & Totaro, 2009).

College administrators and marketers have struggled to articulate their brands so

that prospective students might understand the differences and make wise enrollment choices (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). In intangible service businesses, such as colleges and universities, the brand was both the institution and the educational program (Berry, 2000). Marketers at higher education institutions, just as marketers in other service businesses, have had difficulty applying traditional brand marketing concepts (Zeithaml et al., 2009). Service quality provided through the automated portal web sites and by the institutions' personnel might be a means to differentiate competing higher education institutions in the United States and their online programs. Services that students receive include support in paying for courses, receiving course materials, updating academic records, delivering online courses, and solving technology issues.

Researchers have studied service quality in higher education in situations to assess information technology support services (Badri, Abdulla, & Al-Madani, 2005), examine differences in online and campus delivery (LaBay & Comm, 2003), examine possible relationships between service quality and student satisfaction (Ham, 2003; Stodnick & Rogers, 2008), and study cultural influences on perceptions of service quality (Arambewela & Hall, 2006). The evidence from the literature review for the study was that researchers had not studied possible relationships between service quality and brand equity in online higher education.

Service quality was correlated with customer satisfaction and purchase intentions, or brand loyalty, in a variety of service industries (Baumann et al., 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007). Consumers of online services were able to assess service quality and the value of online brands (Alzola

& Robaina, 2005; Christodoulides et al., 2006; Parasuraman et al., 2005). Researchers might benefit from the study by having a better understanding of possible relationships between service quality and online brand equity and the possible effects of mediating variables, such as satisfaction and brand loyalty.

The study was of theoretical interest because researchers have not studied or have not reported on possible relationships between service quality and brand equity in the literature. In addition, the study was of practical interest because administrators and marketers have struggled to articulate the value of their brands in higher education (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). Administrators and marketers will gain valuable insight into how to position online programs based on differences in support services quality. Communication of competitive advantages could be based on demonstrated support services quality and students' beliefs about the value offered by the institutions' online programs. Students will benefit as they seek to make informed choices about the quality of support services offered by online higher education institutions.

Problem Statement

The problem was that researchers and marketers lacked information about possible relationships between service quality and online brand equity in intangible and often undifferentiated services businesses (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). The services sector of the economy in the United States is large, and Internet transactions for service businesses are growing rapidly. Consumers might value service quality in online businesses and associate higher levels of service quality with brand equity (Christodoulides et al., 2006; Kotler & Keller, 2006; Zeithaml et al.,

2009). If researchers established a relationship between service quality and online brand equity, managers may be willing to invest to improve the quality of services offered to consumers. Marketers in online service businesses with intangible and often undifferentiated offerings will use the knowledge of the relationships between service quality and brand equity to position and communicate the value of their brands more effectively. Consumers will benefit by having improved support services that provide more value when they interact with online service businesses.

Purpose

The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The Gaps Model of Service Quality related service quality to satisfaction and brand loyalty (Parasuraman et al., 1994). The Online Retail/Service (ORS) Model measured online brand equity (Christodoulides et al., 2006).

The study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity in online service businesses. The new model, based on the positivist knowledge claims of earlier researchers, was a theory of the possible relationships between service quality and online brand equity, as well as possible mediating variables of satisfaction and brand loyalty (Christodoulides et al., 2006; Parasuraman et al., 1994). The study was a survey of students enrolled in online courses at colleges and universities in the United States. Survey methodology was the approach to collect numerical data that was analyzed to determine possible relationships

in the data. The design for the study used survey methodology to extend the research of earlier researchers (Christodoulides et al., 2006; Parasuraman et al., 1994). Surveys were appropriate methodological tools to study consumer attitudes and examine the postpositivist assumptions of the new model.

Colleges and universities are businesses offering intangible educational services, including online courses and programs (Zeithaml et al., 2009). College administrators and marketers have struggled to articulate the value of their brands so that prospective students might understand the differences and make wise enrollment choices (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). The research design for the study was a single-stage, cross-sectional study using a convenience sample of students enrolled in online courses (Creswell, 2003; Zikmund, 2003). The population was students enrolled in online courses at higher education institutions in the United States. The sampling frame, or working population, was students who had taken at least one online course and were accessible through email and Internet web sites. The initial sampling frame, or working population for the study, was 1,070 email addresses and Facebook and LinkedIn contacts. Power analysis, a statistical tool for estimating sample size prior to conducting a study to avoid Type II error, yielded a sample of 155 for power of 80% (Houser, 2007; Researcher's Toolkit, 2009; Trochim & Donnelly, 2007). The sample size of 155 was approximately 14.5% of the initial working population and was a feasible response rate to the survey.

The results of the study provided marketers information about the relationships among service quality of Internet- and human-delivered support services, brand equity, and the mediating variables of satisfaction and brand loyalty in online service businesses.

In addition, the analysis addressed whether differences among respondents based on moderating variables, such as gender and age, affected the relationships among variables. The results also provided researchers and marketers information relating to the possibilities of positioning their brands based on service quality.

Theoretical Framework

Service quality was the difference between the ideal expectations and perceptions of the actual service delivered (Gronroos, 1984; Parasuraman et al., 1985) and may be a fundamental way to differentiate competing businesses. The theoretical bases for service quality include research studies in psychology and marketing. Perceptual differences in product quality existed in early studies to clarify aspects of consumer behavior and the importance of advertising and promotion (Cardozo, 1965; Olshavsky & Miller, 1972). Working with disconfirmation theory, researchers developed the theoretical perspectives of service quality through studies that attempted to identify the perceptual dimensions of product quality and customer satisfaction (Anderson, 1973; Oliver, 1977). Product quality was both instrumental performance, or technical aspects and outcomes of the product, and expressive performance, or psychological outcomes for the consumer (Swan & Combs, 1976).

In the mid-1980s, a comprehensive model of service quality did not exist. The results of research studies suggested that "quality of the service is dependent on two variables: expected service and perceived service" (Gronroos, 1984, p. 37). One of the first models related service quality to technical and functional quality with a mediating variable called image (Gronroos, 1984). Image caused expectations about service delivery (Gronroos, 1984). Once consumers experienced a service, the difference

between expected and perceived service was service quality (Gronroos, 1984).

A comprehensive model of service quality evolved from a multi-industry study involving customer focus groups in retail banking, credit cards, stock brokerage, and appliance repair (Parasuraman et al., 1985). Service quality was the degree and direction of the differences, or gaps, in customers' perceptions and expectations of service quality (Parasuraman et al., 1985). The model was called the Gaps Model of Service Quality (Parasuraman et al., 1985). Further empirical testing of the service quality model led to the first comprehensive measurement scale, called SERVQUAL (Parasuraman, Zeithaml, & Berry, 1988). Service quality dimensions were tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988).

Research studies have demonstrated the value of the Gaps Model of Service Quality and the productivity of the SERVQUAL scale in situations where managers sought to evaluate service quality versus competitors or measure service improvements longitudinally. The SERVQUAL scale has been adapted and used in studies in many service industries where relationships among service quality, satisfaction, and future intentions were of interest to marketers (Baumann et al., 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007; Tsoukatos & Rand, 2006; Wolde-Rufael, 2001). Studies in online service quality demonstrated the need to develop new models and scales that modified the original five-dimension SERVQUAL to account for consumer interactions with service suppliers in the unique Internet environment (Alzola & Robaina, 2005; Gefen, 2002; Parasuraman et al., 2005; Zeithaml & Parasuraman, 2004).

Researchers challenged the fundamental construct of the Gaps Model of Service

Quality, the validity of the SERVQUAL scale, or the reliability of SERVQUAL in specific services settings (Boshoff, 2007; Collier & Bienstock, 2006; Collier & Bienstock, 2009; Cronin & Taylor, 1992; Leu, 2009; Rossiter, 2007; Swaid & Wigand, 2009; Wu, 2006; Yomnak, 2006). Studies demonstrated that direct measures of service quality focusing only on consumers' perceptions were sufficient (Cronin & Taylor, 1992). The concept of service quality as the difference between expected and perceived service was rejected and a new scale called SERVPERF was proposed (Cronin & Taylor, 1992). Customer satisfaction was a customer's direct assessment of service quality, and the earlier Gaps Model of Service Quality and SERVQUAL scale confounded possible relationships among service quality, customer satisfaction, and purchase intent (Cronin & Taylor, 1992).

A literature review of the extant literature on service quality revealed concerns about SERVQUAL and SERVPERF (Coulthard, 2004). The conceptual basis of the definition of service quality in SERVQUAL as the difference between expectations and perceptions was suspect (Coulthard, 2004). Studies had not validated the five-dimension SERVQUAL scale in some industry settings (Coulthard, 2004). The seven-point and nine-point Likert scales used in SERVQUAL presented measurement problems in some studies (Coulthard, 2004). Similar problems existed with SERVPERF (Coulthard, 2004). Despite the apparent flaws, the Gaps Model of Service Quality and the SERVQUAL scale were popular and productive tools for managers to assess service quality and track changes in service performance (Coulthard, 2004). The definition of service quality and measurement techniques associated with the Gaps Model of Service Quality and the SERVQUAL scale remained popular because researchers had not proven alternative

theories that were useful in a broad range of service settings (Sibley, 2007).

Theoretical foundations of brand equity included research in consumer behavior and marketing performance measurement. Marketing professionals and business researchers struggled with comprehensive definitions and precise measurements of brand equity. Brand awareness and brand image were two factors important to strong brands (Keller, 1993). Brand image was the stored perceptions of the brand in consumers' memories (Keller, 1993). Brand equity was the future, stored profits or cash flow resulting from customers' attitudes and behaviors toward the company and the brand (Ambler, 1997). Companies influenced customers' attitudes and behaviors through advertising, public relations, direct marketing communications, and other means that formed impressions with consumers (Ambler, 1997). Unlike other marketing metrics that relied on rational analysis of data and information, brand equity was an anthropomorphized concept that depended on an assumption of relationships between customers and a brand that caused customers to respond by wanting to purchase more or being willing to pay more for the brand (Ambler, 1997). For many consumers, trust was at the root of their relationship with the brand (Ambler, 1997).

In an exploratory study of marketing metrics, 62% of respondents to a survey of marketing professionals and corporate leaders in the United Kingdom described brand equity among important marketing metrics (Ambler et al., 2004). Brand equity was a function of consumers' brand awareness and their perceptions of brand meaning and was important in service businesses (Berry, 2000). In service industries, the company became the brand whereas packaged goods manufacturers created brands distinguishable from the company (Berry, 2000).

Brand equity of Internet businesses was consumers' awareness and image of a company's web site (Page & Lepkowska-White, 2002). According to Page and Lepkowska-White (2002), the four factors that affected image were communications, web design factors, vendor characteristics, and product/service characteristics. Companies developed customer loyalty and high levels of brand equity on the Internet by focusing on factors that increased brand awareness and improved brand image (Page & Lepkowska-White, 2002).

The Online Retail/Service (ORS) Brand Equity Model was a method of measuring brand equity for Internet-based service and retail businesses (Christodoulides et al., 2006). A literature review suggested that no valid and reliable scale existed for measuring brand equity on the web (Christodoulides et al., 2006). Online brand equity was a relational construct and intangible asset co-created by the company offering the online brand and consumers as they experienced the brand (Christodoulides et al., 2006). According to Christodoulides et al. (2006), brand equity consisted of five dimensions, which were emotional connection, online experience, responsive service nature, trust, and fulfillment. A 12-item scale provided valid and reliable measures of the five dimensions for low involvement online purchases of music CDs, books, DVDs, and clothing (Christodoulides et al., 2006). The literature review for the study indicated that researchers had not validated the ORS brand equity model or used the scale to measure brand equity in other online service industries.

Research Questions

Marketers lacked information about service quality and online brand equity to assess whether consumers value service quality. The purpose of the study was to

examine possible relationships between service quality and brand equity in a high involvement online business. The research questions for the study were:

RQ_1. To what extent, if any, did a consumer's perception of service quality, as measured by the Gaps Model, relate to a perception of brand equity, as measured by the ORS Model?

RQ_2. To what extent, if any, did price relate to a consumer's perception of brand equity, as measured by the ORS model?

RQ_3. To what extent, if any, did a consumer's brand loyalty mediate, or influence, the possible relationship between service quality and brand equity?

RQ_4. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between service quality and brand equity?

RQ_5. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between price and brand equity?

RQ_6. To what extent, if any, did a consumer's characteristics, including age and gender, moderate the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction?

Hypotheses

The null and alternative hypotheses for the research were:

$H1_o$. There is no relationship between a consumer's perception of service quality and perception of brand equity.

$H1_a$. There is a significant relationship between a consumer's perception of service quality and perception of brand equity.

$H2_o$. There is no relationship between price and a consumer's perception of brand

equity.

$H2_a$. There is a significant relationship between price and a consumer's perception of brand equity.

$H3_o$. There are no mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H3_a$. There are significant mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H4_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H4_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H5_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H5_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H6_o$. There are no moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

$H6_a$. There are significant moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

Nature of the Study

The study was an examination of a new model to explain attitudes of consumers

toward services quality and brand equity in online service businesses. Results of a literature review were that researchers had not studied or published results about consumers' attitudes toward service quality and brand equity in online service businesses. The strategy of inquiry for the quantitative study was survey methodology. The population for the research was students enrolled in online courses at higher education institutions in the United States. Administrators and marketers at colleges and universities, which are businesses offering intangible and often undifferentiated educational services, have struggled to articulate their brands so that prospective students might understand the differences and make wise enrollment choices (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). For the study, the sampling frame, or working population, for the survey was students who had taken at least one online course at a college or university.

The sampling design was a single-stage, cross-sectional study using a non-probability sample of students accessible through email and Internet web sites (Creswell, 2003; Zikmund, 2003). Because of threats to external validity and the ability to generalize findings to the more than 18.2 million college students in the United States, proportional quota sampling was used. Chi-square testing determined that the proportions by age and gender of survey respondents were not statistically the same as the proportion by age and gender of all college students in the United States. Respondents were assigned random numbers, and a quota sample was drawn to yield a mix of ages and genders that was statistically the same as all college students in the United States. The quota sample was used to test the hypotheses and answer the research questions. Figure 1 is the relationships among the independent (X), mediating (Y), and

dependent variables (Z) for the study (Creswell, 2003). The variables for the study were:

Brand Equity (Z_1). The dependent variable for the study, brand equity was the student's evaluation of the value of the College measured by the adapted ORS scale. The study was an examination of the correlations between brand equity and support service quality and other variables.

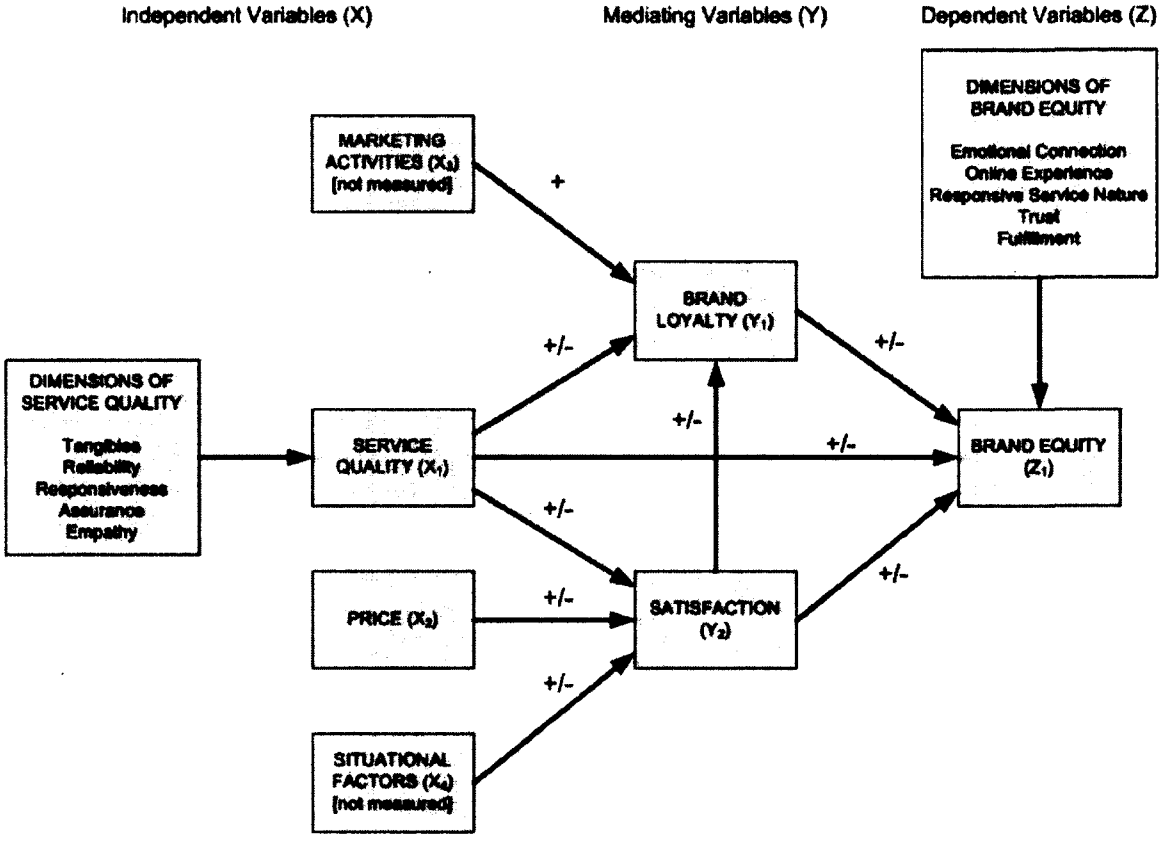


Figure 1. A New Model of Possible Relationships Between Service Quality and Brand Equity in Online Businesses.

The model is an illustration of possible relationships among independent, mediating, and dependent variables in the study of the relationship between service quality and online brand equity.

Brand Loyalty (Y_1). A possible mediating variable for the study, brand loyalty was the behavioral consequences of service quality and marketing activities, defined operationally as a student's intentions to complete the academic program, recommend the

College to others, and participate in additional academic programs. The study was an examination of the mediating effects of brand loyalty on the relationship between service quality and brand equity.

Marketing Activities (X_3). An independent variable, not measured in the study but recognized in the research literature, marketing activities were attempts by College administrators to influence perceptions of brand equity by highlighting the benefits and features of the brand that were important to students.

Price (X_2). An independent variable for the study, price was the student's assessment of the value received for the tuition and fees paid. The study included an examination of the relationship between price and brand equity.

Satisfaction (Y_2). A possible mediating variable for the research, satisfaction was the student's expression of positive or negative outcomes based on evaluations of service quality and price of the college and situational factors. The study included an examination of mediating effects on the possible relationship between service quality and brand equity.

Service quality (X_1). An independent variable for the study, service quality was the student's perceptions of actual service delivered, measured by an adapted SERVQUAL scale. The study included an examination of the relationship between service quality and satisfaction or brand equity.

Situational Factors (X_4). An independent variable, not measured in the study but recognized in the research literature, situational factors were individual and personal circumstances of students, such as health, work, or family influences, which might have affect perceptions of satisfaction with the college or brand equity of the college.

The sampling instrument was a survey questionnaire with a filter question and 45 additional questions organized in six sections. The questionnaire contained a SERVQUAL scale and an ORS scale, both adapted for the study, and additional questions to measure rankings of SERVQUAL dimensions and to assess respondent attitudes toward satisfaction, price, and brand loyalty. In addition, the questionnaire contained questions to categorize respondents. The measurement scales included simple dichotomous, seven-point numerical, constant-sum, and category scales. The simple dichotomous scale and category scales were nominal scales, the constant-sum scale was an ordinal ranking scale, and the seven-point numerical scale was an ordinal scale and assumed approximately interval for the study (Trochim & Donnelly, 2007; Zikmund, 2003). Students entered the web site of SurveyMonkey.com, a commercially available research company, to complete the questionnaire.

The Statistical Package for the Social Sciences (SPSS) is a commercially available software package in common use for analysis of data from research studies in business and the social sciences and was the analytical tool for the study (Norusis, 2006). Analysis for the research included descriptive statistics and univariate, bivariate, and multivariate inferential statistics. Descriptive statistics provided information about the frequencies and percentages of responses for all questions in the survey (Zikmund, 2003). The analysis included parametric and non-parametric univariate statistics to examine differences in the central tendencies and variations in the distributions of the dependent and independent variables based on respondent characteristics (Zikmund, 2003). Bivariate statistics were used to examine possible relationships between two variables and test the research hypotheses, which postulated correlations between variables

(Zikmund, 2003). Tests of linearity and normality of the sample data determined the appropriate statistical tests. Correlation analysis was the appropriate statistical test for possible linear association even though lack of normality of the distribution of the data was a limitation to interpretation of the results (Pallant, 2010; Zikmund, 2003). Spearman rank-order correlation was the appropriate statistics since the variables did not exhibit normality (Pallant, 2010; Zikmund, 2003). The analysis also included use of bivariate statistics to examine possible effects of mediating variables on the correlations between independent and dependent variables.

Multivariate analysis was conducted to examine the predictive power of the independent variables on the dependent variable. Multiple regression analysis was the appropriate statistical technique even though lack of normality of the distribution of the data was a limitation in interpreting the results, as it was with correlation analysis (Pallant, 2010; Zikmund, 2003). Stepwise multiple regression was appropriate for the analysis, and SPSS (Version 18.0) was permitted to select and enter independent variables based on predictive power.

Significance of the Study

The services sector of the economy in the United States is large, and Internet transactions for service businesses are growing rapidly. Marketers lack information about possible relationships between service quality and online brand equity to assess whether consumers value service quality. If consumers value service quality, marketers might use service quality as a source of brand differentiation for online service businesses.

Researchers have studied service quality in a variety of service industries and

found correlations among service quality, customer satisfaction, and future purchase intentions (Baumann et al., 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007). Researchers have found consumers of online services were able to assess service quality or the value of online brands (Alzola & Robaina, 2005; Christodoulides et al., 2006; Parasuraman et al., 2005). The study filled a gap in the research literature about possible relationships between service quality and online brand equity. In addition, the study provided marketers with information for differentiating online service brands and consumers with more value when they interacted with online service businesses.

Definitions

Brand Equity. The dependent variable for the study, measured using the Online Retail/Service (ORS) Model (Christodoulides et al., 2006), brand equity was a strong differential advantage accruing to a brand and allowing greater future sales or profit margins based on positive associations and behaviors by the brand's customers, distribution partners, and other stakeholders (Srivastava & Shocker, 1991).

Brand Loyalty. A possible mediating variable for the study, brand loyalty was behavioral consequences of service quality and marketing activities, including positive outcomes such as repeat purchases, increased expenditures, or recommendations to others and negative outcomes including switching to competitors, complaining behaviors, or negative word-of-mouth (Parasuraman et al., 1988).

Brand Positioning. Brand positioning was the act of developing and implementing a mix of marketing activities to create a distinctive image in the minds of consumers (Kotler & Keller, 2006).

Marketing Activities. An independent variable not measured in the study, marketing activities were advertising, public relations, pricing policies, and other attempts by managers to influence consumers' perception or image of the service business (Gronroos, 1984).

Online Course. An online course was a course at a higher education institution where students received instruction primarily through the Internet but may have met in a physical classroom for some face-to-face instruction (Carnevale, 2006).

Online Program. A degree or non-degree program at a higher education institution where students took courses primarily through the Internet and may live remotely from the campus. Some face-to-face instruction may have occurred in a physical classroom (Carnevale, 2006).

Positivist Knowledge Claims. The belief that researchers discovered knowledge about phenomena through inferences verified by experiments or direct measurement. Researchers discovered knowledge and made positivist knowledge claims using the scientific method and empiricism (Creswell, 2003; Trochim & Donnelly, 2007).

Postpositivist Knowledge Claims. The belief that researchers discovered knowledge about phenomena through theoretical constructs and evidence based on experience. Researchers inferred knowledge by combining positivist knowledge claims with assumptions about possible cause and effect to create new models. Researchers then tested the models and used data as evidence to accept or refine the models (Creswell, 2003; Trochim & Donnelly, 2007).

Price. An independent variable for the study, price was the consumer's perception of the value received for the money paid.

Satisfaction. A possible mediating variable for the study, satisfaction was an outcome based on a consumer's evaluation of a service and comparisons of rewards and costs. Levels of satisfaction existed when performance exceeded expectations as perceived by the consumer (Parasuraman et al., 1988).

Service Quality. An independent variable measured using the Gaps Model of Service Quality and the SERVQUAL scale (Zeithaml et al., 1990) for the study, service quality was the difference between customers' perceptions of actual service delivered and their expectation of service delivery (Zeithaml & Parasuraman, 2004).

Situational Factors. An independent variable not measured in the study, situational factors, such as the structure of the service industry, involvement level of the consumer, scope of information needed for decision making, and personal situations of consumers, might have affected the validity and reliability of SERVQUAL as a measurement instrument for service quality or the relationship between service quality and other variables (Coulthard, 2004; Zeithaml & Parasuraman, 2004).

Support Services. Services delivered by organizations to provide consumers with information and facilitate completion of tasks and transactions. Consumers received support services on the Internet through automated self-help information, forms, or emails and by humans through the telephone, email, or online chat.

Summary

Marketers could use service quality as a source of brand differentiation for online service businesses, but no information had been published about possible relationships between service quality and online brand equity. Researchers had studied service quality in a variety of service industries and found correlations among service quality, customer

satisfaction, and future purchase intentions (Baumann et al., 2007; Pakdil & Harwood, 2005; Rohini & Mahadevappa, 2006; Saravanan & Rao, 2007). Consumers using online services were able to assess service quality and the value of online brands (Alzola & Robaina, 2005; Christodoulides et al., 2006; Parasuraman et al., 2005). The study filled an insufficiency in the research literature, and marketers now have additional information about support services quality and brand equity as a possible method to position their institutions in online higher education.

The purpose of the study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity. The research was a quantitative study with positivist assumptions of the prior knowledge claims of researchers who have developed and tested the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The new model for the study was a postpositivist description of relationships that might have existed among service quality, online brand equity, and mediating variables of brand loyalty and satisfaction.

The population for the research was students enrolled in online courses at higher education institutions in the United States (Zikmund, 2003). The sampling frame, or working population, for the survey was students who had taken at least one online course (Zikmund, 2003). The research design was a single-stage, cross-sectional study using a non-probability, quota sample from students enrolled in online courses (Creswell, 2003; Zikmund, 2003). The survey instrument was a questionnaire with 46 questions organized in six sections. Analyses to test the research hypotheses included descriptive statistics, and univariate, bivariate, and multivariate inferential statistics.

Chapter 2: Literature Review

The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The Gaps Model of Service Quality (Parasuraman et al., 1994) related service quality to satisfaction and brand loyalty. The Online Retail/Service (ORS) Model (Christodoulides et al., 2006) measured online brand equity. The literature review indicated that researchers had not studied or published results of studies that examined possible relationships among service quality, brand equity, and mediating variables in online service businesses. The study was an examination of a new model to explain attitudes of consumers toward online services quality and brand equity in online services businesses.

The literature review was an assessment of historical works that may have had a bearing on the research topic and questions. The purpose was to identify prior research and informed commentary to guide the framework and methodology of the study. In addition, the literature review was to identify insufficiencies in existing literature that warranted further research and validated the research questions of the research. The strategy of the literature review was to review foundational and extended research reported in peer-reviewed journals, databases, and scholarly publications. For the study, the topics of the literature review were the role of service quality in consumer satisfaction in offline and online service environments, brand equity as a measure of consumer value in offline and online service environments, and online higher education as an industry of interest for the study. The databases searched for the literature review were ProQuest,

SAGE Journals Online, and EBSCO Host.

Defining and Measuring Service Quality

According to Parasuraman et al. (1994), service quality was an attitude that consumers have that reflected beliefs, feelings, and behavioral intentions toward a service supplier. Early researchers in psychology and social science established the models used today in marketing research, including a comprehensive theory of attitude-behavior relationship developed by Fishbein and Ajzen (1975). Attitudes were a good predictor of behavioral intention, which was a good predictor of overt behavior (Fishbein & Ajzen, 1975). The early research on attitude, intention, and behavior greatly influenced other researchers who have studied attitudes in consumer behavior, brand marketing, and the social sciences.

Service quality was the customer's assessment of the difference between ideal expectations (E) and perceptions (P) of actual service delivered (Parasuraman et al., 1994). Unlike properties of physical products, service quality was a function of the consumer's perception and attitude (Parasuraman et al., 1994). The definition of service quality as E – P may not apply in all service settings, and direct measures of perceptions might be sufficient to measure service quality (Cronin & Taylor, 1992; Coulthard, 2004; Zeithaml & Parasuraman, 2004). The dimensions of service quality may not be appropriate in all cultures and may not explain consumer behavior in online purchasing situations (Zeithaml & Parasuraman, 2004). The definitions of service quality and measurement techniques first summarized by Parasuraman, Zeithaml, and Berry (1988) remained because researchers had not proven alternative theories that were generalizable and useful in a broad range of service settings (Sibley, 2007).

Research in psychology and marketing during the 1960s through 1990s contained the theoretical underpinnings for service quality. Researchers studying consumer behavior when purchasing products and behavioral influences of advertising and promotion found evidence of perceptual differences in quality (Cardozo, 1965; Gronroos, 1984; Olshavsky & Miller, 1972). Other researchers developed the theoretical perspectives of service quality through studies that attempted to identify the perceptual dimensions of product quality and customer satisfaction (Anderson, 1973; Oliver, 1977; Swan & Combs, 1976).

A relationship existed between the psychological theories of contrast and dissonance and the effort required to obtain a product (Cardozo, 1965). In laboratory experiments, students rated ballpoint pens on quality and price (Cardozo, 1965). In a 2X2 factorial design experiment, some students tested the pens rigorously, while other students simply ordered the pens from a catalog (Cardozo, 1965). All students received identical ballpoint pens, although price points for the pens varied (Cardozo, 1965). All students completed a survey on quality and satisfaction. The hypothesis was that the relationship between the effort to acquire a product and the expectations and perceptions of product performance led to consumer satisfaction (Cardozo, 1965). The results of the experiment were that students who had higher levels of effort and expectations based on higher prices also had higher levels of satisfaction (Cardozo, 1965). Less satisfied respondents had disconfirmed expectations based on their tests of the pens (Cardozo, 1965). The study related psychological theories to consumer behavior with products and set the stage for later research in service quality.

Overstatement and understatement of product performance can affect consumer

favorability ratings (Olshavsky & Miller, 1972). Disconfirmation theory suggested that consumer experiences with poorly performing products led to their expressions of dissatisfaction (Olshavsky & Miller, 1972). Marketing touting, or overstatement of product performance, led consumers to higher favorability ratings (Olshavsky & Miller, 1972). To test the hypothesis, one hundred students in university marketing classes completed a survey that assessed their favorability ratings of reel-to-reel tape recorders after listening to two minutes of voice and music of low and high quality (Olshavsky & Miller, 1972). Some students completed surveys that included descriptions overstating the quality of the recordings while others completed surveys with descriptions understating the quality (Olshavsky & Miller, 1972). Overstatement led to higher favorability ratings for both low and high quality recordings while understatement led to lower favorability ratings (Olshavsky & Miller, 1972). The complexity of the products and the ambiguities of evaluating performance might have led consumers to different expressions of satisfaction and dissatisfaction (Olshavsky & Miller, 1972). The observation was foreshadowing of later studies to understand the intangibility aspects of services and the relationships of disconfirmation theory in service delivery to expressions of consumer satisfaction or dissatisfaction.

Theories in psychology and consumer behavior were related (Anderson, 1973). Four psychological models that related consumer dissatisfaction to expectations of product performance were cognitive dissonance, contrast, generalized negativity, and assimilation-contrast (Anderson, 1973). Researchers using cognitive dissonance assumed that consumers minimized differences between expectations and perceptions of product performance (Anderson, 1973). Researchers using contrast theory assumed that

consumers magnified differences, while researchers using generalized negativity theory assumed that any perception of performance less than expectations led consumers to negative feelings about the product performance (Anderson, 1973). Researchers using assimilation-contrast theory assumed zones of acceptance or rejection based on consumers' beliefs that performance was inside or outside of acceptable performance ranges (Anderson, 1973).

The earlier study by Cardozo (1965) contained errors in interpretation of the data (Anderson, 1973). A series of experiments with ballpoint pens using a 2X6 factorial design tested each of the four theories and concluded that results generally supported the assimilation-contrast model (Anderson, 1973). Different theories might be helpful in explaining consumer dissatisfaction with more or less complicated products needing varying levels of communications to inform consumers of product features and benefits (Anderson, 1973). The implication of the study was that marketers might tailor communications to keep consumer expectations close to actual expected performance to minimize the extent of possible disconfirmation and customer dissatisfaction (Anderson, 1973). The study was important in affirming possible connections between psychological theories, marketing activities, and consumer behavior, and in illuminating the possibility of a zone of acceptance by consumers when evaluating product performance.

Product complexity and ambiguity in performance evaluations might have influenced the relationships of consumer expectations and satisfaction (Swan & Combs, 1976). Researchers in prior studies often assumed a limited number of product attributes that made up the consumers' decision set when evaluating satisfaction (Swan & Combs, 1976). Attributes should describe either instrumental performance, which was

performance of the physical product, or expressive performance, which was performance that met psychological expectations (Swan & Combs, 1976). In a critical incidence survey, students reported on clothing performance (Swan & Combs, 1976). Incidents were categorized as instrumental or expressive and were correlated with the students' perceptions of satisfaction (Swan & Combs, 1976). Findings were that satisfaction correlated more highly with expressive performance while dissatisfaction correlated more highly with instrumental performance (Swan & Combs, 1976). The relationships of product performance and satisfaction were more complex than prior research suggested, and new models of the interplay of physical and psychological attributes and variables were needed to advance understanding of consumer satisfaction (Swan & Combs, 1976).

Both expectations and perceptions were important to consumer evaluations of quality. Consumers' expectations of automobile performance prior to test drives were important to evaluations of satisfaction in post-test drive perceptions (Oliver, 1977). The results were similar to previous studies where higher expectations tended to yield higher evaluations of satisfaction (Oliver, 1977). Conclusions were that marketers should properly position products through accurate communication, avoid inflated claims that might create higher levels of disconfirmation during product usage, and concentrate on post-purchase communication to reduce cognitive dissonance (Oliver, 1977).

In a peer-reviewed journal article, Gronroos (1984) presented one of the first theories of service quality (see Figure 2). A comprehensive model of service quality did not exist, and "quality of the service is dependent on two variables: expected service and perceived service" (Gronroos, 1984, p. 37). For managers of businesses to compete, they needed to define customer's perceptions of quality and determine service improvements

to effect perceptions positively (Gronroos, 1984). Instrumental and expressive performance were elements that determined service quality (Gronroos, 1984; Swan & Combs, 1976). Instrumental performance was the technical aspects of products, and expressive performance was the perceptual dimensions of services (Gronroos, 1984). In a qualitative survey, executives in business-to-business service industries reported on the differences in product performance and the production process itself (Gronroos, 1984). Product performance was necessary but not sufficient for how consumers viewed quality (Gronroos, 1984). Corporate image and other marketing activities were performance factors that explained consumers' quality assessments (Gronroos, 1984).

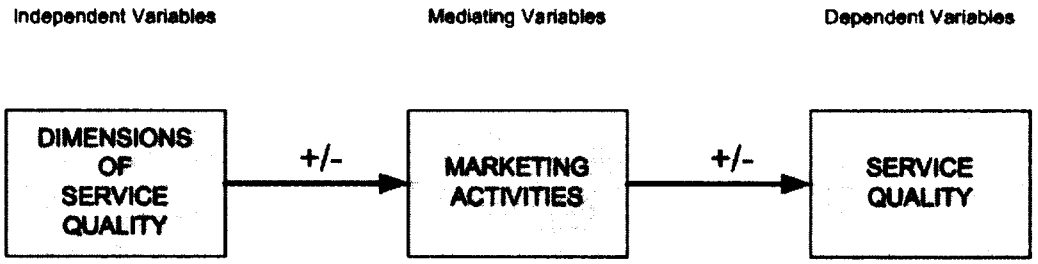


Figure 2. Relationships in Gronroos' Model of Service Quality.
Service quality was dependent on both expected and perceived service, and marketing activities were mediators that influenced consumers' perceptions of service quality (Gronroos, 1984).

Image, a controllable variable, mediated consumer's perceptions of quality and expectations and might change assessments of service delivery (Gronroos, 1984). Once consumers experienced a service, the difference between expected service and perceptions of service delivery was service quality (Gronroos, 1984). The research led to refinement of service quality models during a formative period in understanding the elements of service delivery in organizations worldwide.

In the mid-1980s, few researchers had attempted to model and test service quality due to the difficulties of delimiting and measuring the construct (Parasuraman et al.,

1985). Researchers who focused on product quality constructs offered little guidance (Parasuraman et al., 1985). Researchers in service quality had to account for three elements of services, which were intangibility, heterogeneity, and inseparability (Parasuraman et al., 1985). Disconfirmation theory from psychology was an approach to explaining service quality (Parasuraman et al., 1985). The study hypothesized that service quality was the difference between consumer expectations and perceptions of performance, or E – P (Parasuraman et al., 1985). If expectations exceeded perceptions (E > P), then "negative disconfirmation" occurred, and if perceptions exceeded expectations (E < P), then "positive disconfirmation" occurred (see Figure 3).

Focus groups of leaders in retail banking, credit card services, securities brokerage, and product repair and maintenance delved into ideal descriptions of service delivery, reasons for satisfaction and dissatisfaction in service delivery, the meaning of service quality, consumer performance expectations, and possible dimensions of service quality (Parasuraman et al., 1985). When the findings from the focus groups were compared, the researchers noted, "remarkably consistent patterns emerged from the four sets of executive interviews" (Parasuraman et al., 1985, p. 44). The most important finding was:

> A set of key discrepancies or gaps exists regarding executive perceptions of service quality and the tasks associated with service delivery to consumers. These gaps can be major hurdles in attempting to deliver a service that consumers would perceive as being of high quality (Parasuraman et al., 1985, p. 44).

The discrepancies were described in a model of service quality known as the Gaps Model of Service Quality (Parasuraman et al., 1985). The knowledge gap existed

between customer expectations and managers' understanding of customer expectations

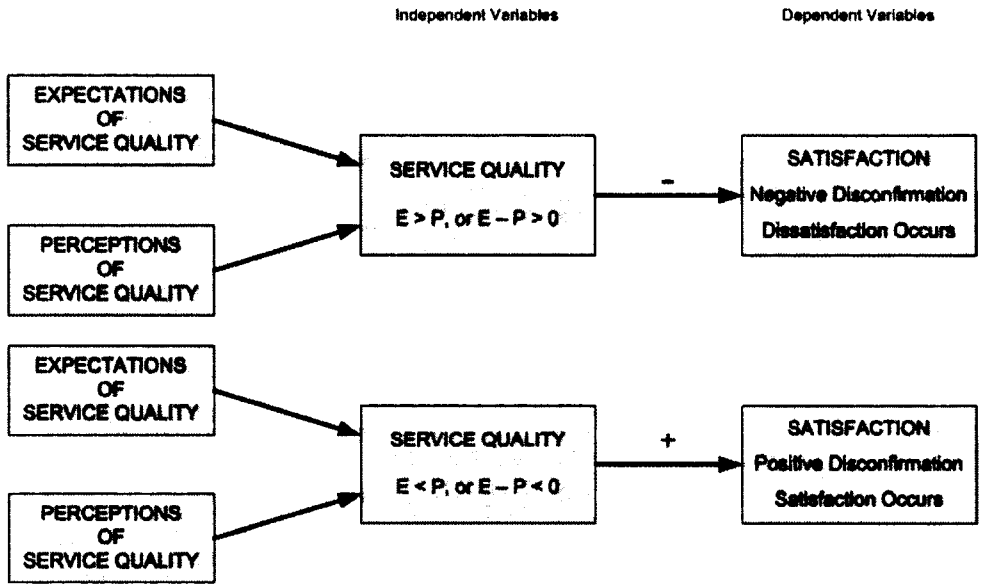


Figure 3. Relationships Between Service Quality and Satisfaction. If consumers' expectations exceeded perceptions of service quality, negative disconfirmation, or dissatisfaction occurred, and if consumers' perceptions exceeded expectations of service quality, positive disconfirmation, or satisfaction occurred (Parasuraman et al., 1985).

(Parasuraman et al., 1985). The design gap occurred between managers' understanding of customer expectations and service designs and standards (Parasuraman et al., 1985). The performance gap was the discrepancy between service standards and service delivery by service personnel (Parasuraman et al., 1985). The communications gap was between the actual service delivery and communications to consumers that led to expectations (Parasuraman et al., 1985).

During the focus groups, the executives described 10 determinants of service quality, which were reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding, and tangibles (Parasuraman et al., 1985). Consumers evaluated the service delivery on the 10 determinants and compared their expectations with their perceptions (Parasuraman et al., 1985). The 10 determinants

were not quantified, might overlap, and required further examination using quantitative research (Parasuraman et al., 1985).

A scale to measure service quality was developed and tested (Parasuraman et al., 1988). Service quality theories offered by leading researchers suggested four conceptual frameworks that influenced research and scale development (Parasuraman et al., 1988). Theories included perceived quality versus objective quality, quality as an attitude, quality different from satisfaction, and expectations compared to perceptions, or E – P (Parasuraman et al., 1988). According to Holbrook and Corfman (1985), perceived service quality was a "subjective response of people to objects and is therefore a highly relativistic phenomenon that differs between judges" (Parasuraman et al., 1988, p. 15). Service quality was an overall evaluation and, therefore, had characteristics of an attitude (Parasuraman et al, 1988). Consumers associated the perception of service quality with the enduring affective component of attitude, and satisfaction was more transaction-specific and might cause a change in the attitude following an experience of disconfirmation (Oliver, 1981; Parasuraman et al., 1985). Service quality, as perceived by consumers, was a comparison of expectations of service quality to perceptions of actual service delivery (Parasuraman et al., 1985).

A 10-dimension, 97-item scale with two pairs of statements for each item was tested to measure expectations of service quality and perceptions of service delivery (Parasuraman et al., 1988). The scales were seven-point numerical scales ranging from "strongly agree" to "strongly disagree" to measure the strength of agreement to each statement (Parasuraman et al., 1988). Iterative surveys and factor analysis led to a 34-item scale and subsequently a 22-item scale (Parasuraman et al., 1988). The statistical

analysis demonstrated the validity and reliability of the 22-item scale (Parasuraman et al., 1988). Further empirical testing of the service quality model led to the first comprehensive measurement scale, called SERVQUAL (Parasuraman et al., 1998). SERVQUAL was a service quality scale with five dimensions, which were tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988).

Tangibles were physical properties of equipment and facilities as well as the appearance of service delivery personnel (Parasuraman et al., 1988). Reliability was dependability and accuracy in performance of the service (Parasuraman et al., 1988). Responsiveness was the willingness of the service provider to help customers and offer prompt service (Parasuraman et al., 1988). Assurance was the ability of service providers to offer knowledge, trust, and confidence (Parasuraman et al., 1988). Empathy was the ability of service providers to offer individualized attention and care to customers (Parasuraman et al., 1988).

Subsequent to the original research, other researchers challenged the reliability of the SERVQUAL scale in diverse service settings and argued that consumers might weigh the five dimensions of service quality differently based on situational factors (Zeithaml & Parasuraman, 2004). A constant-sum scale was added as a means of weighting the five dimensions in an overall assessment of service quality (Zeithaml & Parasuraman, 2004). Researchers use constant-sum scales to assess the ranking or weighting of attributes or dimensions by having respondents assign points or percentages in proportion to the relative importance assigned to each attribute or dimension (Cooper & Schindler, 2006). Figure 4 is an illustration of the mediating role of situational factors between the five dimensions and the overall assessment of service quality.

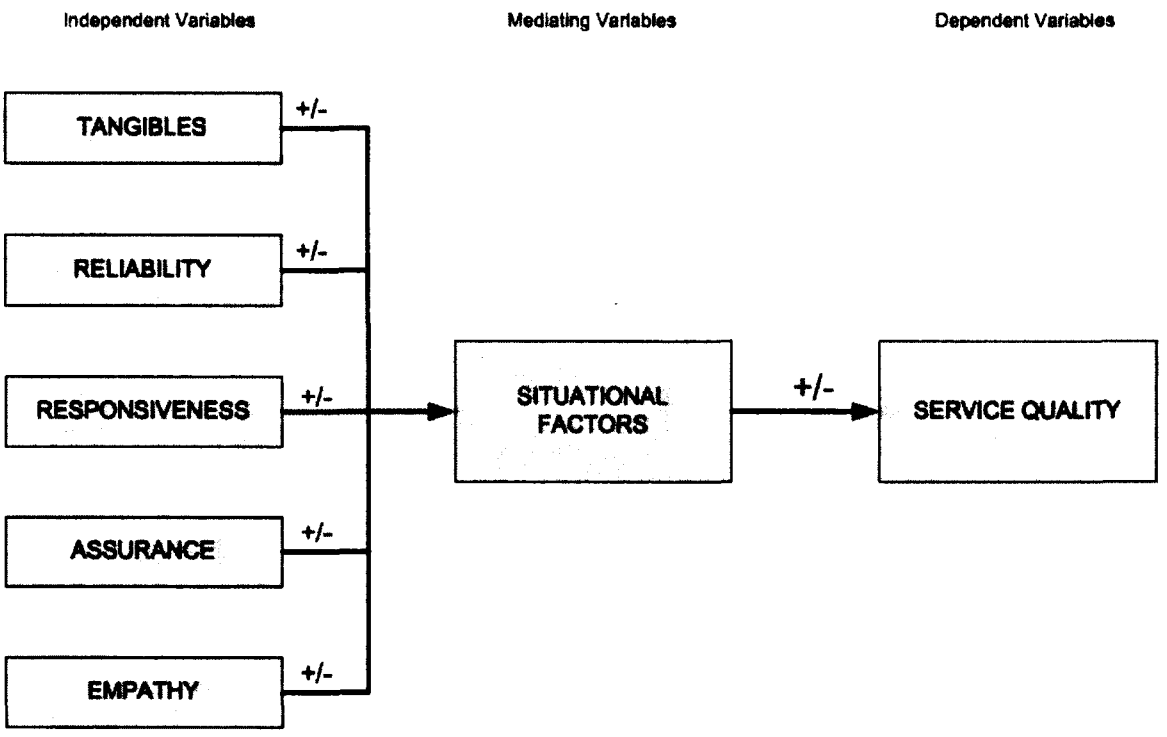


Figure 4. The Effects of Situational Factors on Service Quality.
The service situation might mediate between consumers' perceptions of the dimensions of service quality and the overall assessment of service quality (Zeithaml & Parasuraman, 2004).

Researchers used the SERVQUAL scale and 22-item instrument in many retail settings where at least a small component of the transaction involved service delivery (Parasuraman et al., 1988). In addition, SERVQUAL was used to track service quality in the same setting over time or to measure service quality across stores in a chain, versus a competitor, or against an imaginary ideal organization (Parasuraman et al., 1988). Studies to understand the relative importance of the five dimensions, which might be different in diverse service settings, used SERVQUAL (Parasuraman et al., 1988). Furthermore, researchers used SERVQUAL to measure quality assessments among various segments of a customer base to determine possible differences in perceived service quality (Parasuraman et al., 1988).

The Gaps Model of Service Quality and the SERVQUAL scale were standards for measuring service quality (Zeithaml et al., 1990). Researchers identified new information about the definitions and natures of the five dimensions of service quality (Zeithaml et al., 1990). Satisfaction with service delivery was also dependent on consumers' experiences with product features and pricing (Zeithaml et al., 1990). The definition of service quality as the difference between customer expectations of service quality and customer perceptions of service delivery was widely accepted by many researchers (Coulthard, 2004).

Some researchers asserted that a direct measure of service quality that ignored the differences between expectations and perceptions was sufficient to measure service quality and rejected the service quality definition of E – P (Carman, 1990; Cronin & Taylor, 1992). Customer satisfaction preceded a customer's assessment of service quality and the assertion that service quality was E – P confounded possible relationships among service quality, customer satisfaction, and purchase intent (Cronin & Taylor, 1992). While the five dimensions of the SERVQUAL scale were measures of service quality and the scale was a reliable instrument for measuring service quality, a new model, called SERVPERF was presented (Cronin & Taylor, 1992). Customer satisfaction was an antecedent of service quality, which was a performance-based measure (Cronin & Taylor, 1992). In empirical studies of consumers' responses to service quality in banking, pest control, fast food, and dry cleaning businesses, results did not confirm the validity of SERVQUAL (Cronin & Taylor, 1992). Customer satisfaction preceded an assessment of service quality and managers should focus attention on price, product quality, and service quality as a means of assuring higher levels of customer

satisfaction (Cronin & Taylor, 1992). In addition, dimensions of service quality had different weights in different service industries (Cronin & Taylor, 1992).

A review of the extant literature in 1994 found research studies that supported and challenged the disconfirmation theory approach, the validity of the service quality definition as the difference between expectation and perceptions, and scale development that led to SERVQUAL (Parasuraman et al., 1994). Further examination of the literature led to new definitions of adequate service and desired service and suggested that an acceptable range of service alternatives might benefit managers seeking to improve service quality (Parasuraman et al., 1994). Three measurement constructs of the 22-item SERVQUAL scale were tested in an empirical study (Parasuraman et al., 1994). The constructs were a direct, performance-based measure, a difference model that required respondents to assess expectation and perceptions of service quality for each item at the same time, and the original SERVQUAL scale (Parasuraman et al., 1994). The diagnostic value of the original scale was superior because researchers could examine differences in expectations and perceptions, or a zone of tolerance of differences in service quality (Parasuraman et al., 1994). The original SERVQUAL scale performed as well as the direct, performance-based measure on all criteria except the ability to explain variance in the overall service quality perceptions (Parasuraman et al., 1994). Based on the findings of the study, managers continued to adopt the original SERVQUAL scale to study consumer assessments of adequate service, desired service, and perceptions of actual service delivered (Parasuraman et al., 1994).

Researchers reasserted the superiority of SERVPERF based on simplicity and validity (Cronin & Taylor, 1994). Challenges existed with the scale dimensions of both

SERVPERF and SERVQUAL in applications across service industries (Cronin & Taylor, 1994). The dispute over definition and measurement of service quality was summarized as:

> Parasuraman, Zeithaml, and Berry (1988) based the development of the scale on the concept of perceived quality, related but not equivalent to satisfaction, that results from the comparison of expectations with perceptions. Cronin and Taylor (1992, 1994) argued that despite a general reluctance of market researchers, perceived quality is best conceptualized as an attitude...Consequently, according to Cronin and Taylor, the use of an expectation-disconfirmation model as the basis for SERVQUAL is not appropriate. An attitudinal model of service quality should be used instead. (Coulthard, 2004, p. 481)

The concerns expressed by researchers were that the conceptual basis of SERVQUAL as the difference between expectations and perceptions was flawed (Coulthard, 2004). In addition, the SERVQUAL scale lacked validity in some industry settings, and measurement problems existed with the seven-point and nine-point Likert scales used in SERVQUAL (Coulthard, 2004). SERPERF had similar problems with SERVQUAL (Coulthard, 2004). The conclusion was that despite the apparent flaws, the Gaps Model of Service Quality and the SERVQUAL scale were popular and productive tools for managers to assess service quality and track changes in service performance (Coulthard, 2004).

Various researchers had applied and tested the model and scale in service situations where businesses sought to evaluate their service quality versus competitors or measure service improvements longitudinally (Zeithaml & Parasuraman, 2004). The

continuing debate was a question of whether "service quality is an attitude or a transaction-specific measure" (Sibley, 2007, p. 42). If service quality were an attitude, then service quality preceded customer satisfaction (Sibley, 2007). If a transaction-specific measure, then customer satisfaction preceded service quality (Sibley, 2007). A proposed method of reconciling the two points of view was defining service quality as a transaction-specific independent variable that might correlate with a consumer's transaction-specific satisfaction and influence a consumer's attitudinal satisfaction (Sibley, 2007). In an empirical study, a 25-item scale on eight dimensions measured the service quality of health maintenance organizations (HMOs) as suppliers to primary medical groups, or PMGs (Sibley, 2007). The results of a survey of PMGs confirmed that levels of transaction-specific service quality correlated with levels of transaction-specific satisfaction and, in turn, with levels of attitudinal satisfaction (Sibley, 2007). Managers might benefit from measuring transaction-specific service quality and satisfaction and studying the longitudinal changes in consumer satisfaction (Sibley, 2007). Researchers needed to test the new model in other service settings (Sibley, 2007).

An alternative scale to SERVQUAL had three dimensions identified as outcome, process, and tangibles (Jun, 2007). The new scale assumed that service quality was a transaction-based measure instead of a disconfirmation measure (Jun, 2007). In a survey of students about service quality in a restaurant, the proposed scale was compared to the original SERVQUAL scale (Jun, 2007). Both scales were statistically significant predictors of satisfaction (Jun, 2007). Additional research we needed to validate the findings and the application of the new scale in other situations (Jun, 2007).

Service Quality Research in Various Service Settings

Researchers continued to express concern about the definition of service quality in the Gaps Model of Service Quality and the use of the SERVQUAL scale, and some researchers continued to call for additional foundational research (Coulthard, 2004; Zeithaml & Parasuraman, 2004; Sibley, 2007). The SERVQUAL scale with 22 items representing five dimensions was adapted and used in service quality studies in a variety of service settings (Baumann et al., 2007; Rohini & Mahadevappa, 2006; Wolde-Rufael, 2001). In other service businesses, the dimensions of SERVQUAL scale were modified more substantially to adapt to the specific needs in that industry (Pakdil & Harwood, 2005; Saravanan & Rao, 2007; Ugboma et al., 2004).

The original SERVQUAL scale was used in the Australian banking industry to investigate the relationship between service quality, customer satisfaction, repurchase intent, and willingness to recommend the bank to others (Baumann et al., 2007). Four of the five dimensions of SERVQUAL, responsiveness, empathy, assurance, and reliability, were positively correlated and statistically significant indicators of satisfaction (Baumann et al., 2007). The tangibles dimension correlated with satisfaction but was not statistically significant (Baumann et al., 2007). Overall customer satisfaction was highly correlated with willingness to use the bank in the future and recommend the bank to others (Baumann et al., 2007). The research demonstrated the importance of studying relationships of the individual dimensions of service quality to satisfaction and future intentions because the relationships might be different in different service settings.

The original SERVQUAL scale was used to study consumer and managerial assessments of service quality in a hospital in Bangalore, India (Rohini & Mahadevappa,

2006). The study included patient expectations versus perceptions gaps and the managerial perceptions of customer expectations gaps (Rohini & Mahadevappa, 2006). The study results were statistically significant differences in patient expectations and perceptions of service quality across all five of the SERVQUAL dimensions (Rohini & Mahadevappa, 2006). Patient and managerial expectations of service quality were different, indicating possible areas of improvement for managerial attention (Rohini & Mahadevappa, 2006). The study suggested that measuring customers and managers expectations independently might illuminate needs for service quality improvement.

A SERVQUAL scale modified for the services offered by the Better Business Bureau (BBB) was used to study service performance of a not-for-profit BBB operating in a mid-size city in Texas (Wolde-Rufael, 2001). The survey respondents were 112 members and users of BBB services (Wolde-Rufael, 2001). The findings indicated high ratings of expectations and perceptions of service quality across all five SERVQUAL dimensions with the lowest expectations and perceptions for tangibles (Wolde-Rufael, 2001). Items measured for the tangibles dimensions included the BBB offices and equipment (Wolde-Rufael, 2001). The high ratings for expectations and perceptions might have occurred because members were loyal to the BBB and not able to offer objective assessments (Wolde-Rufael, 2001). The study suggested that brand loyalty of consumers might be affected by factors other than service quality.

The dimensions of the SERVQUAL scale and the items on the measurement instrument were modified more substantially in other service businesses to adapt to the specific needs in that industry. A six-dimension scale was used to measure service quality in the automotive services industry in India (Saravanan & Rao, 2007). The six

dimensions were measures of human aspects of delivery of service, core service, social responsibility, service delivery systemization, service tangibles, and services marketing (Saravanan & Rao, 2007). The results were good predictability of overall quality evaluations, customer loyalty, and satisfaction (Saravanan & Rao, 2007).

In a study in a major medical center in the United States, patients rated expectations and perceptions of service quality on seven expectations and 15 perceptions items specific to the healthcare services delivered (Pakdil & Harwood, 2005). Items included wait time, nurse performance, doctor friendliness, and doctor thoroughness (Pakdil & Harwood, 2005). The study results were correlation and statistical significance between reported expectations, perceptions, and patient satisfaction with recommendations on how to improve service quality, including improving appointment times, clinic location, and clinic appearance (Pakdil & Harwood, 2005).

A modified SERVQUAL scale was used to study service quality to reflect the specifics of port services in Nigeria (Ugboma et al., 2004). The assumptions of the study were that gap analysis informed managers about how customers defined service quality, and the knowledge gained improved development of customer satisfaction measures (Ugboma et al., 2004). Customer satisfaction was assumed as an antecedent of repurchase intentions (Ugboma et al., 2004). The modified SERVQUAL scale was shortened from 22 to 12 items to ensure completion (Ugboma et al., 2004). Clearing agents who could assess expectations and perceptions of port services were surveyed in two Nigerian ports, Lagos and Port Harcourt (Ugboma et al., 2004). Findings included statistically significant differences in service quality perceptions between the two ports and differences among the SERVQUAL dimensions for each port (Ugboma et al., 2004).

The study demonstrated that the SERVQUAL scale could be modified to minimize non-response bias with little or no impact on the validity of the measurement instrument.

Measuring Service Quality in Online Environments

Managers began to develop Internet web sites for their businesses during the 1990s and 2000s as a new channel for communications and conducting transactions with consumers. Service quality was among variables identified in studies of how consumers developed trust in internet web sites (Chen, 2003). The original five-dimension SERVQUAL scale was modified used to account for consumer interactions with product and service suppliers in the unique Internet environment (Alzola & Robaina, 2005; Gefen, 2002; Parasuraman et al., 2005; Zeithaml & Parasuraman, 2004). There were 18 studies during 2000 to 2005 that used one or more of the SERVQUAL dimensions to assess service quality in Internet-based business-to-consumer services (Alzola & Robaina, 2005). Dimensions identified for further empirical study of service quality in ecommerce were reliability, security, guarantee, personalization, and design (Alzola & Robaina, 2005). In addition, the controversy around service quality as a measure of expectations versus perceptions (E – P) continued in the Internet service environment (Collier & Bienstock, 2006, 2009; Rossiter, 2007).

Researchers continued to develop and test concepts based on disconfirmation theory, the Gaps Model of Service Quality, and the SERVQUAL scale. The literature on services quality reflected studies that evaluated human-delivered services and studies of ecommerce service quality in situations where retailers used the Internet as a customer-self-help tool to facilitate product purchases (Parasuraman et al., 2005). One study (Gefen, 2002) reported that the five SERVQUAL dimensions reduced to three in

ecommerce and the dimensions were tangibles, empathy, and a combination of reliability, responsiveness, and assurance (Parasuraman et al., 2005). The study included situation-specific measures that might not be applicable in other online service situations (Parasuraman et al., 2005).

The continuing controversy over gap scores as measures of service quality, the applicability of the five dimensions of SERVQUAL to different service domains such as ecommerce, and the relationships of service quality to perceptual variables such as value, satisfaction, and future intentions were issues that affected research in online service settings (Parasuraman et al., 2005). A 22-item scale, called E-S-QUAL was developed and tested with four dimensions of service quality, which were efficiency, fulfillment, system availability, and privacy (Parasuraman et al., 2005). An 11-item, three-dimension scale was developed and tested to explain consumers' evaluations when service failure and subsequent recovery occurred (Parasuraman et al., 2005). The scale dimensions were responsiveness, compensation, and contact (Parasuraman et al., 2005).

Researchers could have measured service quality in e-commerce, or e-service quality, by measuring consumers' perceptions and ignoring consumers' expectations (Collier & Bienstock, 2006). Service quality in e-commerce was a function of process dimensions, outcome dimensions, and recovery dimensions (Collier & Bienstock, 2006). In addition, service quality in e-commerce was a formative indicator based on consumers' experiences with Internet web sites (Collier & Bienstock, 2006). Researchers might measure e-service quality by measuring items associated with the process, outcome, and recovery dimensions. This study hypothesized that each dimension was independent and affected consumers' evaluations of satisfaction and future purchase

intent. Collier and Bienstock (2006) tested their hypothesis with a 54-item questionnaire, and results supported adoption of the model to measure e-service quality. The content validity of the scale was challenged and the assertion made that the questionnaire measured a construct called e-retailing instead of the service quality of the Internet-based retail transaction (Rossiter, 2007). Researchers also challenged the assertion of service quality as a formative indicator and the sampling and measurement procedures of the study that validated the 54-item scale (Rossiter, 2007).

The debate about the validity and reliability of service quality measurements continued in online service businesses. Researchers using reflective indicators might have made fundamental errors in study design (Collier & Bienstock, 2009). In a study of both formative and reflective concepts, researchers concluded that managers relying on results from reflective model studies might be misled about the relationships of consumers' assessments of eservice quality, satisfaction, and repurchase intent (Collier & Bienstock, 2009). The literature might have contained fundamental understandings of the nature of service quality and eservice quality and the relationships to customer satisfaction and future purchase intent (Collier & Bienstock, 2009).

A modified E-S-QUAL scale was used to measure consumers' service quality, satisfaction, and repurchase intent with consumer electronics e-retailers (Wu, 2006). The results supported the empirical findings but that a 17-item E-S-QUAL scale was a better instrument than the original 22-item SERVQUAL scale (Wu, 2006). The results also supported a two dimensional scale for consumers experiencing service failure and suggested that responsiveness and contact in the three-dimensional E-S-QUAL scale collapsed into a single dimension (Wu, 2006).

Service quality models and measurement scales were investigated in specific applications in online service businesses (Boshoff, 2007; Leu, 2009; Swaid & Wigand, 2009; Wu, 2006; Yomnak, 2006). The validity of the E-S-QUAL scale was addressed in a study of consumers of books, CDs, DVDs, and similar products from an online retailer (Boshoff, 2007). The results were that the E-S-QUAL scale was valid, and a six-dimension scale that measured eservice quality was a superior predictor of value and loyalty (Boshoff, 2007). The six dimensions were efficiency, delivery, privacy, speed, system availability, and reliability (Boshoff, 2007). A recommendation of the study was that the dimensional properties of E-S-QUAL should be assessed in each application to ensure the validity of each dimension (Boshoff, 2007).

Some researchers have used E-S-QUAL in specific online situations and did not find correlations among eservice quality, satisfaction, and repurchase intent. In a study of consumers' evaluations of an online bookseller in Thailand using a modified E-S-QUAL scale, results did not show a statistically significant relationship between eservice quality and customer satisfaction (Yomnak, 2006). No relationship existed between customer satisfaction or dissatisfaction and future intent to use the online bookseller (Yomnak, 2006). Further study of the underlying dimensions and items of eservice quality might have yielded new service dimensions in the specific e-retail settings (Keystone, 2008). In a study that addressed antecedents of consumers' intentions to buy from e-retailers, a model was developed that might be useful for researchers seeking to understand underlying dimensions and items of eservice quality prior to scale development and testing (Keystone, 2008). The model has not been validated in subsequent studies (Keystone, 2008).

A six-dimension model was tested with a 28-item scale to correlate eservice quality with three types of loyalty for e-retailers (Swaid & Wigand, 2009). The three types of loyalty were preference loyalty, price sensitivity, and complaining behavior (Swaid & Wigand, 2009). The six dimensions of eservice quality were information quality, reliability, responsiveness, assurance, web site usability, and personalization (Swaid & Wigand, 2009). The results were positive and statistically significant correlations among dimensions of eservice quality, preference loyalty, and price sensitivity, and negative correlations between the responsiveness dimension and complaining behavior (Swaid & Wigand, 2009). The research contributed to the literature by demonstrating the general applicability of the E-S-QUAL model with appropriate and tested scale modifications.

A study of online consumers and managers in Taiwanese manufacturing, service, and financial firms assessed the adequacy of the E-S-QUAL scale as a tool to measure possible relationships among eservice quality, satisfaction, and loyalty (Leu, 2009). In addition, the study was a measure of possible gaps between consumers and managers perceptions about the three variables (Leu, 2009). The results were a statistically significant relationship among eservice quality, satisfaction, and loyalty (Leu, 2009). The E-S-QUAL scale was a valid and reliable scale for measuring possible relationships (Leu, 2009). In addition, the results were statistically significant differences between consumers' and managers' perceptions of eservice quality on the four dimensions of service quality of efficiency, fulfillment, system availability, and privacy (Leu, 2009). Results of a factor analysis indicated the weightings of the importance of the four dimensions were different from the weightings found in previous studies (Leu, 2009).

Cultural differences may have existed in the predominantly Chinese population, and researchers were warned to be sensitive to and investigate cultural differences in future studies (Leu, 2009).

A literature review of studies about online service quality in 2009 suggested some proposed dimensions of e-service and measurement scales had not been empirically validated and studies tended to focus on online delivery of products but not services (Barrutia, Charterina, & Gilsanz, 2009). Studies focused on customers, but not management or service delivery personnel's perception of eservice quality (Barrutia et al., 2009). Researchers had tended to focus on the Internet channel as a sole delivery channel as opposed to one of a number of consumer alternatives for information, products, and service (Barrutia et al., 2009). Furthermore, researchers had investigated a number of industries and discovered that the dimensions of eservice quality were situational (Barrutia et al., 2009)

A new avenue of research was eservice situations where consumers interacted with both online technologies and service personnel (Barrutia et al., 2009). The marketing literature supported the integration of multiple communication and delivery channels, and businesses were using a variety of channels to satisfy consumer needs (Barrutia et al., 2009). A study in the banking industry in Spain assessed the delivery performance of banks that focused on both internal, staff-oriented marketing and external consumer marketing versus banks that focused solely on consumer marketing (Barrutia et al., 2009). Bank managers who focused on internal and external marketing were more likely to integrate the communication and delivery channels and deliver better performance for consumers (Barrutia et al., 2009). A modified E-S-QUAL scale was

used to measure service quality and other perceptual measures of internal marketing and delivery performance (Barrutia et al., 2009). The results indicated that bank managers who focused on both internal and external marketing created conditions that led to higher delivery performance (Barrutia et al., 2009). Additional studies in other industries where managers used the Internet and personal delivery channels might have confirmed the validity and reliability of the modified E-S-QUAL scale (Barrutia et al., 2009).

The managerial use of multiple delivery channels was fertile ground for new research on eservice quality (Messenger, Li, Stroulia, Galletta, Ge, & Choi, 2009). An extensive review of service quality literature identified the need to map service processes, identify relationships between self-service and human service, and measure dimensions of the hybrid service delivery model (Messenger et al., 2009). The SERVQUAL scale was postulated as a useful tool to measure both human and eservice quality (Messenger et al., 2009). While not yet empirically tested, the researchers offered advice that integrated research findings during the 1990s and 2000s and provided direction for future research (Messenger et al., 2009).

Defining Brand Equity

A brand was "a name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers" (American Marketing Association, 2010). A brand was also a product or service with added dimensions that differentiated it from competitors seeking to satisfy the same consumer needs (Kotler & Keller, 2006). In the early 1990s, no single theory existed to explain the relationship of consumers' beliefs and attitudes toward brands (Srivastava & Shocker, 1991). Brand equity was the result of consumers' associations with a brand, or brand image, and other

constructs related to quality and brand loyalty (Aaker, 1991). Customer-based brand equity was the consumer's assessment of the psychological value of the company, brand, or product (Keller, 1993). Brand equity was a marketing asset that was hard to measure in financial terms but was correlated with consumer trust in the product, service, or institution (Ambler, 1997). The definition of brand equity encompassed concepts of reputation, goodwill, or customer satisfaction (Ambler, 2000). Theoretical foundations of brand equity were research in consumer behavior and marketing performance measurement (Ambler, 1997; Keller, 1993).

Brand equity had five benefits, which were awareness of the brand, a perception of quality, loyalty to the brand, positive associations beyond quality; and proprietary benefits (Aaker, 1991). Proprietary benefits included the results of marketing activities such as logos, imagery, trademarks or service marks, and channel relationships (Aaker, 1991). Brand equity conveyed value to the consumer through consistent information, trust, and satisfaction (Aaker, 1991). Brand equity also had value for organizations in the form of customer loyalty, competitive advantage, price leveraging, and efficiency in marketing communications (Aaker).

The study of brand equity was important, and high levels of brand equity added financial value to organizations and provided opportunities to improve marketing efficiencies (Keller, 1993). A concept called customer-based brand equity contained two factors important to strong brands (Keller, 1993). The two factors were brand awareness, or strength of consumers' memories about the brand, and brand image, or the stored perceptions of the brand in consumers' memories (Keller, 1993). Consumers formed three associations with a brand, and the associations were the attributes, or descriptive

features of the brand, the benefits, or personal assessments of what the brand can do for them, and the attitudes, or overall evaluations of the brand (Keller, 1993). Brand attributes might have related to the product or the service environment, price, and other experiential features (Keller, 1993). Benefits might have been specific experiences the consumer had with the brand or might have been symbolic in nature (Keller, 1993). Attitudes might have been associated with brand behaviors and led to actual purchase and consumption (Keller, 1993). A model relating brand knowledge, defined as a summation of brand awareness and brand image, and brand equity was a contribution to the literature (Keller, 1993). When consumers' had knowledge of a brand compared to competitors and associations were positive, brand equity was high (Keller, 1993). Specifically, marketers might have focused on product features and elements of the marketing mix, specifically packaging, in-store displays, symbolic imagery, promotion, and pricing (Keller, 1993). The focus might have improved brand awareness and brand image (Keller, 1993)

Brand equity was the future, stored profits or cash flow resulting from customers' attitudes and behaviors toward the company and the brand (Ambler, 1997). Companies might have influenced customers' attitudes and behaviors through advertising, public relations, direct marketing communications, and other means that left impressions with consumers (Ambler, 1997). Unlike other marketing metrics that relied on rational analysis of data and information, brand equity was an anthropomorphized concept (Ambler, 1997). Brand equity depended on an assumption of relationships between customers and loyalty to a brand that caused customers to want to purchase more or being willing to pay more for the brand (Ambler, 1997). For many consumers, trust was at the

root of their relationship with the brand (Ambler, 1997).

The definitions of Keller (1993) and Ambler (2000) highlighted the struggles marketing professionals and business researchers had with comprehensive explanations and precise measurements of brand equity. Ambler (2000, p. 5) asserted, "Brand equity, for many companies, is by far their biggest and most valuable asset. It lacks the attention it deserves because it is not on the balance sheet and it is hard to measure". A disparity existed between corporate accounting measurements of past performance and marketing measurements of prospective revenues and future profits (Ambler, 2000). Brand equity was a concept so large that most companies could not adequately define or measure the future value of revenues and profits based on associated good feelings of customers (Ambler, 2000). Ambler's contribution to the literature included advocacy of a practical approach to selecting metrics that fit the industry and company.

A formalized conceptualization of the model of customer-based brand equity (CBBE) included four questions (Keller, 2001). Consumers asked about brands: Who are you? What are you? What do I think or feel about you? What kind of association and how deep a connection do I want to have with you? (Keller, 2001) The four questions were brand identity, brand meaning, brand response, and brand relationships, respectively (Keller, 2001). Managers could have used six building blocks to build brand equity, and the concepts were salience, performance, imagery, judgment, feelings, and resonance (Keller, 2001). Specific product attributes and benefits for each of the six building blocks would influence customers' perceptions of brand equity at the right place and time (Keller, 2001). The strongest brands would have been those that excelled with the most building blocks (Keller, 2001). To increase equity using the six building blocks,

managers might have leveraged associations with other people, places, and items through marketing activities to strengthen brand knowledge (Keller, 2003).

Researchers have studied brand equity empirically. In an experimental design to test the definitions of brand equity proposed by Aaker (1991) and Keller (1993), consumers first evaluated attributes of polar fleece sweaters in focus groups (Faircloth et al., 2001). The study design included product samples with relevant attributes for style, fabric, types of cuffs, pockets, and colors or patterns (Faircloth et al., 2001). Consumers completed a survey to assess brand image, attitudes toward each brand, and purchase intentions, which were the measures of brand equity (Faircloth et al., 2001). Brand image affected brand equity, but brand attitude did not directly affect brand equity (Faircloth et al., 2001). Brand attitude affected brand equity indirectly through correlation with brand image (Faircloth et al., 2001). The study was a partial validation of the definitions of Aaker (1991) and Keller (1993), and conclusions were that Keller's conception of brand knowledge was an appropriate summation of the antecedents of brand equity (Faircloth et al., 2001). Managers might have used brand equity as a relevant measure of differential competitive advantage caused by manipulations of the elements of the marketing mix (Faircloth et al., 2001). Figure 5 is an illustration of possible antecedents of brand equity.

Brand Equity in Service Organizations

Many brand equity researchers focused on products but not services (Arora & Stoner, 1996). Because many service suppliers operated in highly competitive markets with poorly differentiated offerings, managers might have realized significant rewards for brand building in services industries (Arora & Stoner, 1996). Managers in industries where services had high credence qualities, such as medical diagnosis, legal advice, and

educational services, might have benefited the most because consumers bought the services because of trust in the service provider (Arora & Stoner, 1996).

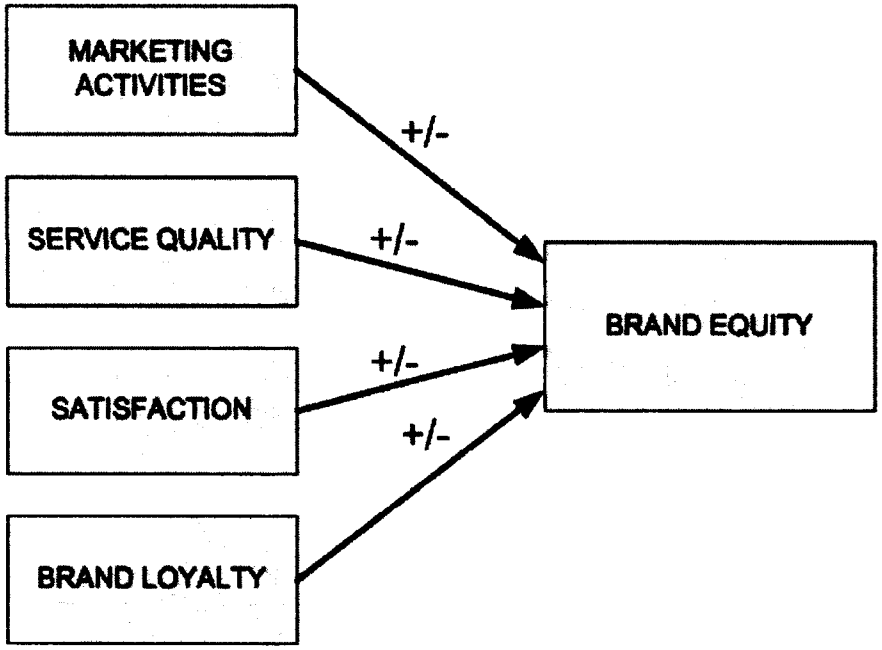


Figure 5. Variables Affecting Brand Equity.
The figure is an illustration of the possible relationships between independent variables, identified by Aaker (1991), Keller (1993), and Faircloth et al. (2001), and brand equity.

A study of the history of the development of services marketing suggested that product brand management processes must be modified for service businesses (de Chernatony & Riley, 1999). Services branding was an exercise in branding the company instead of a tangible product (de Chernatony & Riley, 1999). In financial services companies, competitors had poorly defined brand positions (de Chernatony & Riley, 1999). Marketers in financial services companies focused too much on name recognition and not on clearly differentiated brand positions (de Chernatony & Riley, 1999). Managers tried to apply product brand theory, which was ineffective (de Chernatony & Riley, 1999). Because service delivery in financial institutions depended on people, employees should have been engaged in creating and executing the services brand (de

Chernatony & Riley, 1999).

Research on service quality suggested that brand equity was a function of the brand awareness of consumers and their perceptions of brand meaning (Berry, 2000). In packaged goods manufacturing companies, managers created brands distinguishable from the company (Berry, 2000). In service industries, the company became the brand (Berry, 2000).

Measuring Brand Equity

Beginning in the1990s, researchers sought to develop measures of brand equity. Methods of measuring brand equity included pricing advantages, satisfaction or loyalty, perceived quality, popularity or leadership, and perceived value (Aaker, 1996). Other methods were brand personality, organizational associations, brand awareness, market share, and market price and distribution coverage (Aaker, 1996). The methods were based on direct consumer assessments and indirect financial measures (Aaker, 1996).

The history of thinking and practice about marketing metrics evolved from financial measures to non-financial measures that attempted to assess the value of customer relationships and the long-term equity of the relationships (Clark, 2001). Customer-focused measures were brand awareness and brand favorability ratings, customer satisfaction, and customer loyalty measures (Clark, 2001). A recommendation was that managers should have used marketing measures appropriate to the organization's strategies with benchmarks derived from customers and competitors (Clark, 2001).

In an exploratory study of marketing metrics, 62% of respondents to a survey of marketing professionals and corporate leaders in the United Kingdom described brand

equity among the important marketing metrics (Ambler et al., 2004). Possible brand equity interactions were in six categories, which were consumer attitudes, consumer behavior, relationships with trade partners, competitors, innovation, and accounting (Ambler et al., 2004). Few managers used brand equity as a measure to explain performance in the six categories, although many managers were measuring brand equity (Ambler et al., 2004).

Possible correlations among brand value, advertising expenditures for the brand, and financial performance, were studied to define brand equity (Eng & Keh, 2007). Brand value was defined by *Financial World* magazine, and financial performance was measured by return on assets (ROA) and change in stock value (Eng & Keh, 2007). The dataset was approximately 1,400 data points on publicly traded firms during 1992 through 1996 (Eng & Keh, 2007). Brand value and advertising expenditures were correlated with ROA and statistically significant (Eng & Keh, 2007). The effects of advertising expenditures were significant for up to three years (Eng & Keh, 2007). Brand value and advertising expenditures were not significantly correlated with stock value (Eng & Keh, 2007). The study contributed to understanding the measurement of brand equity by confirming that specific financial indicators of brand equity correlated with overall financial performance but not necessarily stock performance (Eng & Keh, 2007).

Broyles, Schumann, and Leingpibul (2009) summarized the research on the antecedents of brand equity and postulated that functional and experiential antecedents existed. Functional antecedents included any utilitarian aspects that satisfied consumers' functional needs (Broyles et al., 2009). Experiential antecedents satisfied psychological needs or needs that came about through social influence (Broyles et al., 2009).

Functional antecedents included aspects of quality, including reliability, durability, and effectiveness, and might also include elements of the marketing mix, such as price, distribution, and communications (Broyles et al., 2009). Experiential antecedents included brand awareness and attitude, as well as consumer behavioral traits such as brand loyalty and personal associations with the brand. Broyles et al. (2009) developed a model of functional and experiential antecedents and components and linked brand equity to outcomes, particularly purchase intentions. In an empirical test of the model for two well-known brands, Kentucky Fried Chicken and Coke, and using survey research, the researchers discovered different relationships among the functional and experiential antecedents and components for the two brands (Broyles et al., 2009). Different product categories might exhibit different relationships among independent and mediating variables, and brand equity was a complex theoretical concept (Broyles et al., 2009).

Online Brand Equity

Researchers have addressed how brand equity occurred on the Internet. Web equity was consumers' awareness and image of a company's web site (Page & Lepkowska-White, 2002). Four factors affecting brand image mirrored Berry's (2000) model, and the factors were communications, web designs, vendor characteristics, and product/service characteristics (Page & Lepkowska-White, 2002). Managers could develop customer loyalty and high levels of brand equity on the Internet by focusing on factors that increased brand awareness and improved brand image (Page & Lepkowska-White, 2002). Brand awareness was a function of marketing activities, specifically marketer and non-marketer communications, while brand image was a function of all four factors of the model (Page & Lepkowska-White, 2002).

The disciplines of direct marketing, which relied on a continuing dialogue with prospective customers and a search for measurable response, were important to online brand equity (Christodoulides & de Chernatony, 2004). While advertising managers originally viewed the Internet as a new advertising medium, marketers developed an understanding of the relationship-building characteristics of the online environment (Christodoulides & de Chernatony, 2004). Based on a review of the extant literature, 10 factors that affected online brand equity were identified (Christodoulides & de Chernatony, 2004). The factors were online brand experience, interactivity, customization, relevance, site design, customer service, order fulfillment, quality of brand relationships, communities, and web site logs (Christodoulides & de Chernatony, 2004). The recommendation was that researchers in online brand equity could combine the earlier work of brand equity of products, with new measures to develop, test, and validate models for online brand equity (Christodoulides & de Chernatony, 2004).

The Online Retail/Service (ORS) Brand Equity Model was developed and tested as a method of measuring brand equity for Internet-based service and retail businesses (Christodoulides et al., 2006). The literature review conducted prior to the research suggested that no valid and reliable scale existed for measuring brand equity of service and retail businesses on the web (Christodoulides et al., 2006). Online brand equity was conceptualized as a relational construct and intangible asset co-created by the company offering the online brand and consumers as they experienced the brand (Christodoulides et al., 2006). Brand equity had the five dimensions of emotional connection, online experience, responsive service nature, trust, and fulfillment (Christodoulides et al., 2006). A 12-item scale provided valid and reliable measures of the five dimensions among

respondents who had made low-involvement online purchases of music CDs, books, DVDs, and clothing (Christodoulides et al., 2006). Published results have not validated the ORS brand equity model, and the model had not been used to measure brand equity in other online service industries, according to findings of the literature review for this study.

Rios and Riquelme (2010) developed and tested a model of online brand equity that had brand awareness, brand recognition, loyalty, trust, and brand value as antecedents. The researchers identified brand value as related to the company's value proposition and closely related to quality (Rios & Riquelme, 2010). Using survey research, the researchers tested the model using Amazon, CDNow, eBay, and Dell as the online brands (Rios & Riquelme, 2010). All antecedents of brand equity were statistically significant except brand value (Rios & Riquelme, 2010). The researchers speculated that the definition of brand value as price was too narrow and noted that "price-related value may do little to create brand equity" (Rios & Riquelme, 2010, p. 14).

Growth and Importance of Online Higher Education

The online higher education industry was a service business of interest for the study. Faculty, administrators, and staff offered higher education services in the United States at approximately 4,000 colleges and universities, including branch campuses (Rhodes, 2006). In the fall of 2008, more than 18.2 million students enrolled in colleges and universities in the United States (Digest of Education Statistics, 2009). The number of students participating in online higher education in the United States had increased from 2002 until 2008. Marketing researchers at Eduventures, a higher education research firm, reported that 937,000 students were taking online courses at colleges and

universities in the United States at the end of 2004, up by approximately 100% in two years (Carnevale, 2005). More than 3.49 million students, or one in five students in higher education in the United States, took at least one online class during the fall term in 2006 ("Online education", 2007; "Sloan Survey", 2007). The number of students increased to 4.6 million for the fall term in 2008 ("New study", 2010). The number of students taking at least one online course had increased by tenfold in eight years. During the 2009-10 academic year, students might have paid as little as $2,500 for average in-state tuition and fees in public, two-year institutions or as much as $26,200 for average tuition and fees in not-for-profit, private institutions (Baum & Ma, 2009).

The reasons why online education was growing included benefits to students (Tanner et al., 2009), benefits to higher education institutions (Overton, 2008), and benefits to employers (Merriman, 2006). Direct participants benefited from online higher education. The major benefits to students were removal of barriers of time and space (Tanner et al., 2009). Some prospective students were unable to sacrifice work, family, or personal time to travel to ground campuses and participate in scheduled class meetings (Tanner et al., 2009). Online education was a viable option (Tanner et al., 2009). In a study of 16 educational institutions in Great Britain, tangible benefits of online education were identified for administrators (Overton, 2008). Cost savings and better utilization of human resources were available to administrators (Overton, 2008). In addition, online higher education expanded recruiting opportunities and led to better student retention and student achievement (Overton, 2008). Furthermore, online higher education had appeal to employers who were seeking increased skills in their employee (Overton, 2008).

Employers were indirect participants in online higher education who benefited

from the online modality. Managers had earlier attached a stigma to employees who earned degrees through online education, but by 2005, many accepted the viability of online education (Merriman, 2006). A more knowledgeable workforce made up of employees who might not be able to continue their educations without online education were a benefit to businesses (Merriman, 2006). Some college and university administrators offered lower tuition, and managers noted the cost savings for their employees (Merriman, 2006). Managers were able to recruit and retain better employees due to the availability of tuition benefits for online education (Merriman, 2006). Some colleges and universities offered customized programs for businesses, and employee convenience was another reason that managers changed their attitudes toward online education (Merriman, 2006).

Differentiating Competing Brands in Online Higher Education

As the number of students enrolled in online courses increased, college administrators and marketers struggled to articulate their brands so that prospective students might understand the differences and make wise enrollment choices (Carnevale, 2006). Colleges and universities were service businesses. Services were intangible offerings that provided value to consumers and for which consumers were willing to pay (Zeithaml et al., 2009). In addition to the intangible nature, services were simultaneously produced and consumed, dependent on consumer participation, perishable with wide fluctuations in demand and supply, and heterogeneous in service quality due to human production (Zeithaml et al., 2009).

Marketers have struggled to apply traditional brand marketing concepts to services, including higher education, because there were more variables in services

marketing, the customer interface was critical, and concepts and theories about the traditional four Ps of marketing often did not apply to services businesses (Zeithaml et al., 2009). The traditional four Ps of marketing were product, price, promotion, and place, or distribution (Zeithaml et al., 2009). The additional variables in services marketing were people acting as service delivery personnel, processes that moderated the effects of heterogeneous service quality, and physical evidence of service delivery (Zeithaml et al., 2009). While colleges and universities were complex service businesses, and personnel offered face-to-face and online services, the brand was the college or university (Arora & Stoner, 1996; Berry, 2000; de Chernatony & Riley, 1999). As consumers of higher education, students evaluated the college or university brand based on performance factors, situational factors, and marketing activities.

Web sites were relatively recent additions to the services mix for product marketers, retailers, and services organizations. Managers and marketers launched the first commercial web sites in the early 1990s, and most retailers and services companies did not adopt Internet technologies until the mid- to late-1990s (Belch & Belch, 2009). While marketers and consumers have recognized many benefits by adopting technology and deploying web sites, electronic technology presented several paradoxes, or situations that might have co-existed (Mick & Fournier, 1998). Among eight central paradoxes that might have affected online higher education were simultaneous control and chaos, freedom and enslavement, and new and obsolete technologies (Mick & Fournier, 1998). Other paradoxes were simultaneous competence and incompetence, efficiency and inefficiency, fulfillment and created needs, socialization and isolation, and engagement and disengagement (Mick & Fournier, 1998).

Students and prospective students of online higher education institutions received services from their schools via Internet connections to portal web sites. The portal web sites were interfaces to web forms, databases, and information to facilitate school admission and course enrollment, pay tuition and fees, and access student records and course materials. Students used the portal web sites without human interaction to complete many transactions. The institutions' personnel monitored transactions and provided assistance if students had special needs or circumstances. The quality of service provided through the automated portal web sites and by personnel might be a source of brand equity for the institution. Brand equity based on service quality might be a means to differentiate institutions competing in online higher education in the United States.

Service Quality in Higher Education

During the 1990s, researchers used the Gaps Model of Service Quality and the SERVQUAL scale (Parasuraman et al., 1988) to evaluate service quality in higher education. A study using SERVQUAL to assess service quality within and across five colleges and universities also sought to assess the mediating effects of cost of attendance (Ruby, 1996). Students had similar service quality expectations across institutions but service quality perceptions were significantly different (Ruby, 1996). Differences in cost of attendance were not correlated with differences in service quality expectations or perceptions (Ruby, 1996). Administrators had opportunities to influence both students' expectations of service quality and the perceptions of actual service delivered (Ruby, 1996).

The Gaps Model of Service Quality and SERVQUAL were used to investigate service quality among traditional and non-traditional students, who evaluated faculty and

support staff at a university (Schwantz, 1996). No statistically significant differences in overall perceptions of service quality existed between traditional and non-traditional students (Schwantz, 1996). Younger, traditional students found empathy to be a more important attribute among the five SERVQUAL dimensions while older, non-traditional students found reliability to be more important (Schwantz, 1996). Students expressed significant differences in service quality when evaluating faculty versus staff with support staff receiving lower service quality scores (Schwantz, 1996). Students reported service quality differences among service centers or departments, and university administrators might have used the knowledge to begin measurable service quality improvements across the university (Schwantz, 1996).

A modified SERVQUAL scale was adapted to assess the relationships between expected service quality and perceptions of quality at a state university (Christy, 1997). Respondents were asked to compare an ideal, excellent university to the state university (Christy, 1997). An ideal, excellent university was defined as the respondent's perceptions of the qualities and attributes of service quality excellence at a fictitious university (Christy, 1997). The use of an ideal, excellent university added a comparative element to the research not found in other studies (Christy, 1997). Significant differences existed in the assessment of service quality based on student demographics and descriptive variables (Christy, 1997). Students discriminated among service dimensions and between perceptions of service delivery of their university when comparing their university to an ideal, excellent university (Christy, 1997).

Since 2000, researchers have continued to evaluate service quality in higher education and have expanded the scope of service quality studies. Studies have focused

on quality of instruction and course delivery as well as the quality of support services at colleges and universities throughout the world. The Gaps Model of Service Quality and SERVQUAL scale (Parasuraman et al., 1994) were used in higher education to assess information technology support services (Badri et al., 2005; Smith, Smith, & Clarke, 2007), examine possible relationships between service quality, student satisfaction, and retention (Archambault, 2008; Ham, 2003; Chatterjee, Ghosh, & Bandyopadhyay, 2009; Harris, 2002; Kerlin, 2002; Stodnick & Rogers, 2008), assess library and other support services (Petruzzellis, D'Uggento, & Romanazzi, 2006; Sahu, 2006), and study cultural influences on perceptions of service quality (Arambewela & Hall, 2006). In addition, researchers continued to assess the validity and reliability of SERVQUAL (Parasuraman et al., 1994) versus SERVPERF (Cronin & Taylor, 1994) in higher education (Archambault, 2008; Bayraktaroglu & Atrek, 2010; Carter, 2009).

A modified SERVQUAL instrument was used in a survey of students at a campus-based community college (Kerlin, 2000). The survey addressed support services, including financial aid and library services, but not classroom instruction (Kerlin, 2000). The results were significant differences among men and women and among different ethnic groups on a number of SERVQUAL dimensions and specific items (Kerlin, 2000). The results offered opportunities for administrators to address negative service gaps and improve student satisfaction (Kerlin, 2000). In a similar study at a state university, findings were different based on gender and ethnicity (Harris, 2002). Like the earlier study (Kerlin, 2000), significant differences existed in service quality expectations and perceptions among students, and administrators might have used the knowledge as a basis for service quality improvements (Harris, 2002).

A SERVQUAL scale was modified and used to study service quality and satisfaction at ground campuses of two different higher education institutions in the United States (Ham, 2003). Students at the two universities expressed differences in both service quality and satisfaction that were statistically significant (Ham, 2003). Students with lower levels of satisfaction were more likely to express complaints about service, and students who expressed more satisfaction were more likely to express intentions to complete their programs of study at the universities (Ham, 2003). University administrators might have influenced students' expectations of service quality through orientation programs and might have improved service quality by training faculty and staff about the impact of behaviors on students' assessments of service quality (Ham, 2003).

Badri et al. (2005) compared service quality among information technology (IT) centers at three institutions of higher education in the United Arab Emirates. The survey respondents were IT decision makers, IT service suppliers, and students on the three campuses (Badri et al., 2005). The researchers used a modified SERVQUAL instrument. Statistically significant correlations existed among the three survey groups across the three schools in their expectation and perceptions of service quality (Badri et al., 2005). The SERVQUAL dimensions of reliability, responsiveness, and assurance were equally important to IT administrators, IT suppliers, and students, but results differed enough among the three schools to suggest that SERVQUAL could have discriminated among service dimensions and attributes and was a useful tool for discovering areas for service improvement (Badri et al., 2005).

In a study of service quality of a technology services department at a British

university, results were that the SERVQUAL scale was valid and reliable (Smith et al., 2007). The results demonstrated the same relative importance of the five service quality dimensions between students and faculty (Smith et al., 2007). Differences in gap scores between students and faculty for assurance and empathy suggested that study findings were important to improving service quality of the technology services and providing higher levels of satisfaction for students (Smith et al., 2007).

The Gaps Model of Service Quality and the framework of the SERVQUAL scale were used to create and test a student assessment of instructor quality (Emanuel & Adams, 2006). The new instrument was called QISS for Quality of Instructor Service to Students (Emanuel & Adams, 2006). During testing, the new instrument was internally consistent and provided statistically significant differences by student gender and academic level (Emanuel & Adams, 2006). Reliability and responsiveness were the most important dimensions to students (Emanuel & Adams, 2006). The research was a demonstration of the flexibility of the models and scales first proposed and tested by Parasuraman et al. (1994), and the scales were modified to measure classroom performance (Emanuel & Adams, 2006).

The SERVQUAL scale and Gaps Model of Service Quality have broad application in specific higher education settings around the world. A modified SERVQUAL instrument measured service quality and satisfaction among students at a university in Australia (Arambewela & Hall, 2006). In addition, the possible correlation of country of origin among Asian students from China, India, Indonesia, and Thailand was assessed (Arambewela & Hall, 2006). Students responded about ideal expectations of service quality and perceived service delivery for support services (Arambewela &

Hall, 2006). Significant differences existed in service quality and satisfaction based on country of origin, and the differences were attributed to cultural norms and expectations of students (Arambewela & Hall, 2006). University administrators should be aware of cultural expectations when dealing with international students on issues of service quality and satisfaction (Arambewela & Hall, 2006).

The SERVQUAL scale was used in a survey to study service quality in a university library in India (Sahu, 2006). The five SERVQUAL dimensions were modified to include communication and access as two additional dimensions important in the library environment (Sahu, 2006). Students and faculty reported high levels of service quality and overall satisfaction, but faculty reported higher levels of satisfaction (Sahu, 2006). Faculty satisfaction might have occurred due to preferential levels of service (Sahu, 2006). Administrators might increase student satisfaction by ensuring high levels of service quality without regard for status within the university community (Sahu, 2006).

Education ministers in developing countries needed better methods to evaluate teaching performance (Chatterjee et al., 2009). Then-current evaluation methods in Western countries depended heavily on student post-course surveys of satisfaction with instructors and courses (Chatterjee et al., 2009). Because teaching was a service business with instructors as service providers and students as service consumers, the Gaps Model of Service Quality and a modified SERVQUAL scale were used to measure students' expectations and assessments of teaching quality (Chatterjee et al., 2009). Eight service quality parameters of quality teaching existed, including instructor knowledge, ability to teach, ability to communicate, and punctuality (Chatterjee et al., 2009). The results from

the modified SERVQUAL scale were an indicator of the importance that students attached to the parameters (Chatterjee et al., 2009). A result of the study was a scale for researchers to use in future studies to assess teaching performance and guide performance improvements (Chatterjee et al., 2009).

In an exploratory study of the quality of teaching and non-teaching services in an Italian university, higher education was treated as a consumer service (Petruzzellis et al., 2006). Student assessments were measures that education administrators might have used to improve service quality and improve competitiveness with other higher education institutions (Petruzzellis et al., 2006). In surveys of more than 1,100 students about the attributes of an excellent university, respondents reported satisfaction with educational quality and associated satisfaction with the ability of university staff to respond to student needs (Petruzzellis et al., 2006). Students dissatisfied with educational quality attributed dissatisfaction to poor organization and general failure to meet expectations (Petruzzellis et al., 2006). The study was an indicator of the types of teaching and non-teaching service attributes that students used to assess levels of satisfaction with the higher education institution (Petruzzellis et al., 2006).

To demonstrate the application of SERVQUAL to measure student satisfaction with classroom experiences, a modified SERVQUAL scale and the Brightman scale, a traditional assessment tool for student satisfaction, were used in a survey of student assessment of service quality and satisfaction (Stodnick & Rogers, 2008). Both scales had statistically significant predictive ability when assessing the dimensions of service quality as a predictor of overall satisfaction with their instructors (Stodnick & Rogers, 2008). Correlation did not exist between students' grades and satisfaction with

instructors (Stodnick & Rogers, 2008). Students assessed quality and satisfaction fairly, without regard for grades earned (Stodnick & Rogers, 2008). The SERVQUAL scale was more parsimonious and offered administrators more information than the Brightman scale to improve service quality (Stodnick & Rogers, 2008).

Studies in higher education also continued to assess approaches to measuring service quality and brought further illumination to the debate about the need to measure expectations of service quality. The SERVQUAL and SERVPERF scales were used in a study of possible relationships among expectations and perceptions of service quality, satisfaction, and future intentions for traditional age students (Archambault, 2008). The hypothesis was that differences existed in expectations of service quality based on demographic attributes and prior experiences, including number of college graduates in the immediate family and high school grade point average (GPA) of the student (Archambault, 2008). The results were that direct measures of perceptions of service quality using SERVPERF yielded better results (Archambault, 2008). Prior experience did not correlate with student perceptions of service quality (Archambault, 2008). In addition, student expectations of service quality did not correlate strongly with student satisfaction, but perceptions of service quality correlated strongly with satisfaction (Archambault, 2008). A finding of the study was that satisfaction and future intentions were not highly correlated, and a recommendation was that further studies might focus on why satisfaction and loyalty to the institution were not related (Archambault, 2008). A recommendation was that administrators must recognize the importance of service quality and strive for improvements in an increasingly competitive higher education market serving perceptive traditional age students (Archambault, 2008).

Carter (2009) assessed possible relationships among perceptions of service quality, satisfaction, and intentions among MBA students at a university in the United States. Some results supported the use of SERVPERF (Carter, 2009). Expectations of service quality did not moderate the relationship between perceptions of service quality and satisfaction, which supported the position of Cronin and Taylor (1994) that expectations were unnecessary (Carter, 2009). However, expectations did moderate the relationship between service quality and intentions, which supported the position of Parasuraman et al. (1994) that expectations were a necessary component of service quality (Carter, 2009). Although results were contradictory, a recommendation was that administrators should have focused on setting proper expectations while working to improve overall service quality (Carter, 2009).

Bayraktaroglu and Atrek (2010) used SERVQUAL and SERVPERF in a study of business students in a Turkish university to assess expectations of excellent faculty and perceptions of service performance among faculty in the school of business. Findings supported the reliability of the five-dimensions of the SERVQUAL model, and both SERVQUAL and SERVPERF were valid fits to the data (Bayraktaroglu & Atrek, 2010). SERVQUAL was a better fit, and in situations with high-involvement purchases, such as a university education, administrators might benefit from the use of SERVQUAL (Bayraktaroglu & Atrek, 2010). Expectations might have moderated perceptions of service quality, satisfaction with university services, and intentions to complete academic programs and recommend the programs to other students (Bayraktaroglu & Atrek, 2010).

Service Quality in Online Higher Education

Research in service quality occurred in distance learning and Internet-based

learning. In a study of academic delivery quality in distance learning, SERVQUAL was an alternative to then-traditional measures of academic quality, including the College Student Satisfaction Questionnaire, Student Satisfaction Research Unit, and the Telecourse Evaluation Questionnaire (Judd, 1998). SERVQUAL was not a definitive instrument in establishing relationships among service quality, satisfaction, and intentions about further enrollment at the institution (Judd, 1998). A factor analysis tended to reduce all items to one dimension called quality (Judd, 1998). SERVQUAL did not prove useful in assessing satisfaction in distance learning, but the scope and definitions of the dimensions and items might have been too narrow (Judd, 1998). Researchers who defined the five service quality dimensions too narrowly might have found during factor analysis that dimensions would be less than five (Babakus & Boller, 1992). The outcome suggested that researchers must construct service quality items carefully and test for dimensionality that approximates the original SERVQUAL model (Judd, 1998).

Historical measures of quality were post-course surveys of student satisfaction (LaBay & Comm, 2003). Evidence of quality differences in online versus campus-based courses was contradictory based on post-course surveys (LaBay & Comm, 2003). The study used pre-course and post-course surveys of students in a traditional campus-based classroom and an online class taught by the same instructor (LaBay & Comm, 2003). Students in online and campus-based courses expressed similar pre-course expectations of service quality (LaBay & Comm, 2003). Students in the online course reported significantly higher post-course satisfaction, indicating a perception of higher levels of service quality in the online course (LaBay & Comm, 2003).

Gabbard (2004) studied students' attitudes toward online courses in a community

college and assessed possible correlation between comfort with online technologies and student retention and persistence. Students reporting more comfort with technology were more likely to persist in their educational programs (Gabbard, 2004). The findings suggested that college administrators should have increased service support to less technically adept students to influence retention and persistence (Gabbard, 2004).

Simmons (2006) used a direct measure of service quality in a study of students in an online course to evaluate service quality, satisfaction, and behavioral intentions of students and possible correlation between satisfaction and the students' learning styles. Results were that service quality and satisfaction were statistically significant and positively correlated (Simmons, 2006). No statistically significant correlation existed between satisfaction and learning style (Simmons, 2006). In addition, satisfaction and intentions to recommend online courses to other students, to take additional online courses, and to pay more for online courses were positively correlated and statistically significant (Simmons, 2006).

Studies in higher education in countries around the world have provided information about the measurement of service quality. A study of college students in online learning programs in Thailand focused on measuring satisfaction (Siritongthaworn & Krairit, 2006). Online teaching supplemented on-campus education in the same courses (Siritongthaworn & Krairit, 2006). The research clarified the role of various technology components and concepts in student satisfaction in a specific cultural and learning setting (Siritongthaworn & Krairit, 2006). The survey instrument was a 15-item Likert scale to assess technical delivery of online content and measure the components of delivery method, facilitation of communication, operations of the system, and course

content (Siritongthaworn & Krairit, 2006). The study population was full-time students completing online courses in four different majors (Siritongthaworn & Krairit, 2006). While all four components of technical delivery and student satisfaction were correlated and statistically significant, delivery method was more important than course content (Siritongthaworn & Krairit, 2006). Thai students expected to receive content in the on-campus classroom and used the online format to complete and submit assignments (Siritongthaworn & Krairit, 2006). Thai students exhibited various cultural issues with online learning, such as the tendency to take copious notes in class and depend on printed texts for course learning (Siritongthaworn & Krairit, 2006).

Lee, Tseng, Lui, and Lui (2007) examined students' relationships to emerging online technologies in a Taiwanese university and described a model with external factors, beliefs, and attitudes about technologies as independent variables and student satisfaction as the dependent variable. The survey instrument was a seven-point Likert scale that measured the strength of beliefs and attitudes (Lee et al., 2007). A survey of 3,713 students revealed that, in order of importance, clarity of online content, breadth of content coverage, student control of delivery, rapport with instructors, enthusiasm, perceived value, and group interaction were influencers of student satisfaction (Lee et al., 2007). Administrators should continue to improve technology solutions to increase student satisfaction in online higher education (Lee et al., 2007).

Collins (2007) found six areas where students typically require assistance: recruitment and enrollment, academic support, access to materials and instructional resources, career development, financial aid, and technology support. The working population for the study was students taking online courses at a community college in the

United States (Collins, 2007). The study used a survey of student opinions about the importance of attributes of each of the six service support areas (Collins, 2007). The results included a description of the range and dimensions of support services that students might have needed to be successful when taking online courses (Collins, 2007).

Brand Equity in Higher Education

Administrators at colleges and universities have become more aware of the value of their brands. The death of basketball star Len Bias and subsequent loss of reputation at the University of Maryland was a high profile example of the relationship between poor brand equity and student enrollment (Pulley, 2003). Administrators at the University of Maryland successfully rebuilt the brand using marketing communications principles (Pulley, 2003). Administrators at many institutions in the United States faced challenges in recruiting and retention due to competitive pressures and poorly managed brands (Pulley, 2003).

Administrators and marketers at colleges and universities in the United States might benefit by understanding and communicating the value of their brands more effectively. Universities "must create a consistent, powerful identity that provides them with a competitive advantage. The university brand must speak to who they are and the qualities that set them apart" (Lancendorfer, 2007, p. 242). Some individual institutions such as Stanford and Harvard enjoyed high levels of name recognition but the large number and diverse types of institutions in the higher education market in the United States made branding a challenge (West, 2008). International education administrators reported that the disparity between student expectations and the actual study abroad experience was an issue of concern ("State of the Field Survey", 2008). Disparity

between consumer expectations and experiences was a common source of dissatisfaction, which could have diminished customer loyalty and enthusiasm for service brands (Zeithaml et al., 2009).

While administrators at some prestigious educational institutions enjoyed selective admissions with little need for marketing, many administrators operated in a more competitive marketplace. Administrators at approximately 10% of higher education institutions in the United States were highly selective and able to turn away students, but administrators at many schools admitted most qualifying applicants (Mathews & Kinzie, 2006). Administrators at smaller, regional institutions with limited financial resources might have benefitted from communications to build brand awareness and equity (DePerro, 2006). Brand equity might have served administrators in much the same way as human capital and financial resources but research on organizational identity and brand equity in higher education was not substantial (Bastedo, 2006). Few researchers had focused on the impacts of marketing and advertising and few administrators used integrated marketing communications practices to convey the essence of the institution's brand to prospective students (Edmiston-Strasser, 2007).

Administrators faced additional competitive pressures that required understanding and communicating the value offered by their brands. In 2006, the number of colleges and universities in the United States was approximately 4,000 main and branch campuses, up from approximately 2,300 in the mid-1960s (Rhodes, 2006). During this forty-year period, approximately 580 colleges and universities had closed, and the changes reflected the competitive nature of the higher education marketplace (Rhodes, 2006). Approximately 900 for-profit institutions existed in 2006 with enrollments

representing approximately 8% of all students studying in the United States (Rhodes, 2006). Increased competition and higher recruiting costs were reasons why college administrators were abandoning mass marketing and adopting constituent relationship management (CRM) techniques (Tsai, 2007). Administrators used CRM to focus on dialogue with prospective and current students and convey brand value with resulting increases in enrollment and retention rates (Tsai, 2007). In a study of marketing practices of higher education institutions, more than 33% of administrators expressed concerns that they might not have the right communications tools to reach prospective students ("Online poll", 2007).

Summary

The literature review was an assessment of historical works that had a bearing on the research topic and questions. The purpose was to identify prior research and informed commentary to guide the research framework and methodology. In addition, the literature review identified insufficiencies in existing literature that warranted further research and validated the research questions of the study.

Prior studies in service quality provided operational definitions and constructs of models that were useful for the study. Service quality was an attitude that consumers had that reflected beliefs, feelings, and behavioral intentions toward a service supplier (Parasuraman et al., 1994). Service quality was the difference between consumer expectations and perceptions of service quality (Parasuraman et al., 1994). The Gaps Model of Service Quality and the SERVQUAL scale were valid and reliable measurements of the five service dimensions, which were tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988).

Researchers have challenged the validity and reliability of the SERVQUAL scale (Carman, 1990; Coulthard, 2004; Cronin & Taylor, 1992, 1994). Service quality depended on perceptions alone, but not expectations (Cronin & Taylor, 1992). The SERVPERF scale was an alternative scale that measured perceptions of service quality (Cronin & Taylor, 1992). Researchers have noted flaws in the dimensionality and scaling techniques associated with both SERVQUAL and SERVPERF (Coulthard, 2004; Zeithaml & Parasuraman, 2004). In spite of the controversies, the Gaps Model of Service Quality and the SERVQUAL scale were popular and productive tools for managers to assess service quality and track changes in service performance (Coulthard, 2004; Sibley, 2007). Studies in the Internet service environment have validated models and scales that modified the original five-dimension SERVQUAL scale to account for the unique online environment (Alzola & Robaina, 2005; Gefen, 2002; Parasuraman et al., 2005; Zeithaml & Parasuraman, 2004).

The literature review provided information about the definition of brand equity and the possible nature of brand equity. A brand was "a name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers" (American Marketing Association, 2010). A brand was a product or service with added dimensions that differentiated it from competitors seeking to satisfy the same consumer needs (Kotler & Keller, 2006). Brand equity was the perceived quality, loyalty, trust, and satisfaction on the part of consumers that added psychological value (Aaker, 1991; Ambler, 1997; Keller, 1993). In service businesses in highly competitive markets with poorly differentiated offerings, marketers might have realized significant rewards for brand building (Arora & Stoner, 1996). Where services had high credence

qualities, such as medical diagnosis, legal advice, and educational services, marketers might have benefited the most because consumers bought the services based on trust in the service provider (Arora & Stoner, 1996). In service businesses, marketers should have branded the company because consumers viewed the company as the brand (Berry, 2000; de Chernatony & Riley, 1999).

While marketing professionals and corporate leaders agreed that brand equity was an important construct, researchers have not developed a consensus of how to measure brand equity but have suggested financial and customer-focused measures (Aaker, 1996; Ambler et al., 2004; Clark, 2001). As managers have moved business operations to the Internet, researchers have developed interest in web brand equity. The Online Retail/Service (ORS) Model was based on assumptions that online brand equity was a relational construct and intangible asset co-created by the company offering the online brand and consumers as they experienced the brand (Christodoulides et al., 2006). The ORS model was a 12-item, five-dimension scale that was valid and reliable to measure online brand equity in consumer purchases of low involvement, low priced consumer goods (Christodoulides et al., 2006). According to findings of the literature review for the study, researchers had not validated the ORS brand equity model in other online purchase situations, including high involvement, high priced services.

Administrators in online higher education operated in a high growth and highly competitive environment with little differentiation among colleges and universities. Administrators have struggled to differentiate their brands (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007; Lancendorfer, 2007; Mick & Fournier, 1998; West, 2008). Marketers at higher education institutions have had difficulty

applying traditional brand marketing concepts, just as marketers have had trouble in other service businesses (Zeithaml et al., 2009). Service quality provided through the automated portal web sites and by the institutions' personnel might have been a means to differentiate competing higher education institutions and their online programs.

During the 1990s, researchers used the Gaps Model of Service Quality and the SERVQUAL scale to evaluate service quality in higher education (Christy, 1997; Ruby, 1996; Schwantz, 1996). Since 2000, researchers had adopted the Gaps Model of Service Quality and SERVQUAL scale in higher education in situations to assess information technology support services (Badri et al., 2005; Smith et al., 2007), examine possible relationships between service quality, student satisfaction, and retention (Archambault, 2008; Ham, 2003; Chatterjee et al., 2009; Harris, 2002; Kerlin, 2002; Stodnick & Rogers, 2008), assess library and other support services (Petruzzellis et al., 2006; Sahu, 2006), and study cultural influences on perceptions of service quality (Arambewela & Hall, 2006). The SERVQUAL scale was valid and reliable in specific service settings in higher education to measure students' assessments of service quality. Both the SERVQUAL and SERVPERF scales have been used in studies of online higher education to examine relationships between service quality and satisfaction (Collins, 2007; LaBay & Comm, 2003; Gabbard, 2004; Judd, 1998; Lee et al., 2007; Simmons, 2006; Siritongthaworn & Krairit, 2006). According to the literature review, no evidence existed to link online service quality with brand equity of the higher education institution.

Researchers had not studied or published results of studies that sought to examine possible relationships among service quality, brand equity, and mediating variables in online service businesses. The findings of the literature review for the study were that

prior studies in service industries offered guidance for constructing and testing a new model. The Gaps Model of Service Quality (Parasuraman, Zeithaml, and Berry, 1988) and the Online Retail/Service (ORS) Model (Christodoulides et al., 2006) provided the theoretical bases and the measurement scales, which were adapted for the study. Marketers might benefit from the findings of the study by having a better understanding of possible relationships between service quality and brand equity in online service businesses. The study filled the gap in the literature by examining the relationships among service quality, brand equity, and possible mediating variables of satisfaction and brand loyalty. Marketers might use the information to improve service quality and strengthen the positions of their online brands. If they do, consumers may have additional information for making informed decisions based on the service quality of online businesses.

Chapter 3: Research Methods

Marketers lacked information about possible relationships between service quality and online brand equity in intangible and often undifferentiated services businesses (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). The purpose of this quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The Gaps Model of Service Quality (Parasuraman et al., 1994) related service quality to satisfaction and brand loyalty. The Online Retail/Service (ORS) Model (Christodoulides et al., 2006) measured online brand equity. There were no published results of studies examining possible relationships among service quality and brand equity in online service businesses. This study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity in online services businesses.

The research questions for the study were:

RQ_1. To what extent, if any, did a consumer's perception of service quality, as measured by the Gaps Model, relate to a perception of brand equity, as measured by the ORS Model?

RQ_2. To what extent, if any, did price relate to a consumer's perception of brand equity, as measured by the ORS Model?

RQ_3. To what extent, if any, did a consumer's brand loyalty mediate, or influence, the possible relationship between service quality and brand equity?

RQ_4. To what extent, if any, did a consumer's satisfaction mediate, or influence,

the possible relationship between service quality and brand equity?

RQ_5. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between price and brand equity?

RQ_6. To what extent, if any, did a consumer's characteristics, including age and gender, moderate the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction?

The null and alternative hypotheses for the research were:

$H1_o$. There is no relationship between a consumer's perception of service quality and perception of brand equity.

$H1_a$. There is a significant relationship between a consumer's perception of service quality and perception of brand equity.

$H2_o$. There is no relationship between price and a consumer's perception of brand equity.

$H2_a$. There is a significant relationship between price and a consumer's perception of brand equity.

$H3_o$. There are no mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H3_a$. There are significant mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H4_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H4_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H5_0$. There are no mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H5_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H6_0$. There are no moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

$H6_a$. There are significant moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

Chapter 3 is an overview of the research methods and design for the study. The overview includes the participants in the study, the survey instrument, and operational definitions of variables. In addition, the overview includes the methodology for data collection, processing, and analysis. Finally, the chapter includes the assumptions of the methodology, limitations and delimitations of the study, and ethical considerations about the study participants.

Research Methods and Design

The fundamentals of research design are the knowledge claims and theoretical perspective, the appropriate strategies of inquiry, and the methods of data collection and analysis (Creswell, 2003). Knowledge claims are the philosophy and assumptions about how and what learning will occur during the study and include positivist and postpositivist claims of reality and possible cause and effect, socially constructed claims of the variety of views within the study population, advocacy claims of marginalized or

underrepresented individuals within the population, or pragmatic claims not bound by prior conditions but governed by a reasoned search for answers to problems (Creswell, 2003; Trochim & Donnelly, 2007). Alternative strategies of inquiry are quantitative, qualitative, or mixed methods research (Creswell, 2003; Trochim & Donnelly, 2007). Methods of data collection and analysis range from predetermined and closed-ended instruments with numeric data analysis to methods that emerge during study of phenomena with open-ended instruments and non-numeric data analysis (Creswell, 2003). Examples of predetermined research with closed-ended, numeric analysis are experiments and surveys. Focus groups and case studies are examples of methods that might evolve as the study progresses.

The study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity in online services businesses. Results of a literature review were that researchers had identified possible relationships but had not studied or had not published results about consumers' attitudes toward service quality and brand equity in online service businesses. The new model was a combination of the prior knowledge claims of researchers who had developed and tested the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006) and postpositivist assumptions that related the two models and other variables. The new model related the Gaps Model and the ORS model and described possible relationships between service quality and brand equity and possible mediating effects of brand loyalty and satisfaction. In the new model, service quality and price were considered to be independent variables, brand loyalty and satisfaction were mediating variables, and brand

equity was the dependent variable.

Researchers had published an extensive body of knowledge about service quality and brand equity. Quantitative research led to well-defined and -accepted survey instruments for service quality. Positivist knowledge claims of the researchers who developed the Gaps Model and the ORS model were accepted. The new model, based on postpositivist assumptions, was a possible extension of the knowledge. The study did not use research strategies based on social constructivism and pragmatism because researchers in service quality and brand equity had already identified and defined variables important to consumers. In addition, the study did not use research strategies based on advocacy knowledge claims because researchers had not identified marginalized groups when it came to service quality.

Researchers often choose quantitative strategies of inquiry to test new theories based on postpositivist knowledge assumptions (Creswell, 2003). The strategy and research design of the study permitted the adoption of prior knowledge and theory about service quality and brand equity. The theoretical underpinnings of the research were two theories of consumer behavior that described the complex relationships among psychological and business performance variables leading to attitudes about the quality and value of the online services. The Gaps Model of Service Quality was a well-researched and accepted theory relating expectations and perceptions of service quality to consumer satisfaction and future intentions (Parasuraman et al., 1994). The Online Retail/Services Model was a newer theory that relates perceptions of online service to brand equity (Christodoulides et al., 2006). In addition, the quantitative research design for the study was a predetermined and closed-ended survey, and data analysis using

descriptive and inferential statistics led to conclusions about the strength of relationships among the variables.

The study was an online survey of students who had taken at least one online course at a college or university in the United States. Survey methodology is an approach to numerical data collection and is consistent with postpositivist assumptions and the study of consumer attitudes (Creswell, 2003; Trochim & Donnelly, 2007). The sample was a convenience sample of students available through email and social media websites. The survey instrument was 46 questions using categorical and numerical scales to assess student's attitudes about service quality, brand equity, and other variables at their online academic institution. The data analysis included descriptive and inferential statistics to examine the new model of service quality and brand equity and possible mediating effects. The results of the study contributed to understanding how marketers can build the value of their organizations and communicate differentiated positions by focusing on improving quality in support services for consumers in the online business.

Participants

Colleges and universities are businesses offering intangible educational services, including online courses and programs (Zeithaml et al., 2009). College administrators and marketers have struggled to articulate their brands so that prospective students might understand the differences and make wise enrollment choices (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). Marketers at higher education institutions have had difficulty applying traditional brand marketing concepts, just as marketers have had trouble in other service businesses (Zeithaml et al., 2009). In intangible, service businesses such as colleges and universities, the brand is both the

institution and the educational program (Berry, 2000). Service quality provided through the automated portal web sites and by the institutions' personnel might be a means to differentiate competing higher education institutions and their online programs. Services that students receive include support in paying for courses, receiving course materials, updating academic records, delivering online courses, and solving technology issues.

The population for the research was the more than 4.6 million students enrolled in online courses at higher education institutions in the United States ("New Study", 2010; Zikmund, 2003). The sampling frame, or working population, for the survey was students who had taken at least one online course at a college or university in the United States. The sampling methodology was a proportional quota sample from an open population of students accessible through email and Internet web sites (Frippiat, Marquis, & Wiles-Portier, 2010; Ritter & Sue, 2007). Proportional quota sampling was a non-probability sampling method that permitted inferring findings of the study to the population (Trochim & Donnelly, 2007; Zikmund, 2003). The study design and sampling methodology posed challenges to external validity and the ability to project results to the population of all students in the United States.

More than 18.2 million students attended classes at approximately 4,000 colleges and universities in the United States (Digest of Education Statistics, 2009; Rhodes, 2006). More and more students were seeking online courses and degree programs and paying a wide range of differing tuition and fees for their college or university educations. The number of students enrolled in one or more online courses exceeded 4.6 million in 2008-09, a ten-fold increase in only six years (Carnevale, 2005; "New Study", 2010). Table 1 is a demographic profile of gender and age of students at colleges and universities in the

United States during the fall semester of 2009. The majority of college students (58%) were traditional age or younger, and women represented 56% of all college students.

Table 1

Demographic Profile of Students in Colleges and Universities in the United States: Fall Semester, 2009

Gender	Traditional Age or Younger (14-24 years old)		Younger Adults (25-34 years old)		Older Adults (35 years old and older)		Total	
	N	%	N	%	N	%	N	%
Female	6.41	31	2.71	13	2.54	12	11.66	56
Male	5.42	27	2.07	10	1.28	7	8.77	44
Total	11.83	58	4.78	23	3.82	19	20.43	100

Note: Source of data is Digest of Education Statistics (2009). N = number of students in millions.

The research design was a single-stage, cross-sectional study using a convenience sample of students who had taken at least one online course at a college or university in the United States (Creswell, 2003; Zikmund, 2003). The research method was an online survey using 46 categorical and numerical scales to measure students' attitudes toward service quality, brand equity, and other variables at their educational institutions. Criterion validity of the survey instrument was assured by using the SERVQUAL and ORS scales to measure service quality and brand equity, respectively, and by following the advice of the researchers who developed the scales when modifying language to fit the specific service situation (Christodoulides et al, 2006, Parasuraman et al., 1988). To counter threats to construct validity, the survey instrument was reviewed by professionals

in higher education and was pretested by students (Zikmund, 2003). The Cronbach's Alpha coefficient was calculated as a measure of the ability of the scales used in the survey instrument to produce reliable results for each respondent (Pallant, 2010). Split-half testing was used to ensure reliability of the sampling methodology to produce the same results across all respondents (Zikmund, 2003).

The sampling methodology was a convenience sample from an open population of students invited to participate in the online survey. The open population consisted of students available through approximately 800 email addresses and 270 contacts at Internet social media web sites. Invitations were delivered by email and through the social web sites LinkedIn and Facebook. Students and others receiving the email invitation were asked to forward the invitation to other students to create a snowball sample (Trochim & Donnelly, 2007; Zikmund, 2003). Snowball sampling is a method of extending the reach of the initial sampling frame and is a non-probability sampling technique that poses challenges to external validity (Trochim & Donnelly, 2007; Zikmund, 2003). Student respondents entered an Internet web site of SurveyMonkey, a commercially available research company, to complete the survey. The research company captured data from each respondent and tabulated the raw data for analysis.

Power analysis is a statistical tool for estimating sample size prior to conducting a study to avoid Type II error, or accepting the null hypothesis when the alternate hypothesis is true, and to determine the feasibility of obtaining a sample of appropriate size (Houser, 2007; McDaniel & Gates, 2005; Trochim & Donnelly, 2007). For the quantitative study, respondents assessed service quality, price, satisfaction, brand loyalty, and brand equity using seven-point numerical scales. The assumption was that the seven-

point numerical scales were quasi-interval, or approximately interval, scales (Trochim & Donnelly, 2007; Zikmund, 2003). The mean scores of questions about service quality, price, satisfaction, brand loyalty, and brand equity were the measures of each variable. Prior studies did not exist to approximate mean scores and standard deviation and to estimate the normality of the distribution of responses. Assuming normality and a mean score of 4.0 for the population, 4.2 for the sample, standard deviation of 1.0, and confidence level of 95%, power was 50% for a sample size of 68 (Researcher's Toolkit, 2009). The deviation from the population mean of 0.2 was acceptable error. The initial sampling frame was approximately 800 emails, 150 LinkedIn contacts, and 120 Facebook contacts. Snowball sampling was used to increase the sampling frame. The sample size of 68 to yield 50% power given an initial sampling frame of 1,070 was feasible. For the same parameters and assumptions, a sample of 155 corresponded to power of 80% (Researcher's Toolkit, 2009). The sample size of 155 was also feasible given the initial sampling frame and expansion using snowball sampling.

Materials/Instruments

The survey instrument for the online survey, Appendix A, was adapted from prior research to develop and use the Gaps Model and the ORS Model. Appendix B is the original SERVQUAL scale (Parasuraman et al., 1988). Appendix C is the E-S-QUAL scale adapted for online environments (Parasuraman et al., 2005). Appendix D is the scale items tested for the ORS Model (Christodoulides et al., 2006). Dr. Parasuraman granted permission to use and adapt the SERVQUAL scale for the study (Appendix E). Dr. Christodoulides gave permission to use and adapt the scale used for the ORS Model for the study (Appendix F).

The survey questionnaire, Appendix A, had a filter question and 45 additional questions organized in six sections. The length of the questionnaire was not expected to be an impediment to response. The advice of Collier and Bienstock (2006) was accepted, and the questionnaire measured consumer perceptions, but not expectations, of service quality to reduce the length of the questionnaire. The two longest sections of the questionnaire were 22 statements adapted from the SERVQUAL scale and 12 statements adapted from the ORS Model. Both sections required the respondent to indicate agreement or disagreement with each statement using a seven-point numerical scale. The statements were simple, declarative sentences. The sections used radio buttons on a web form for uniform responses. Prior studies had used the SERVQUAL scale, which required 44 responses to the expectation and perception questions, and each study contained additional questions to assess other study variables and to categorize respondents (Zeithaml & Parasuraman, 2004). For the study, the questionnaire was pretested to determine if respondents reported challenges in completing the survey device.

Table 2 is a summary of the sections, variables addressed, survey items, and types of measurement scales. Section 1 captured classification data for the possible moderating variables of age, gender, academic program, experience with online education, and institution where online courses were taken. Sections 2 and 3 were adapted from the original SERVQUAL scale (Parasuraman et al., 1988). The original SERVQUAL scale was the choice for the research because both humans and automated, online methods provided service support for online courses. The original SERVQUAL scale dimensions were adapted for the purposes of the study. The research method for the study did not

use the E-S-QUAL scale because the dimensions of the scale focused on web-based service quality and excluded service quality delivered by humans (Barrutia et al., 2009; Parasuraman et al., 2005). Section 4 of the questionnaire was adapted from the ORS Model (Christodoulides et al., 2006). Sections 5 and 6 were measures of the student's overall satisfaction with the online institution and the student's brand loyalty. Zeithaml and Parasuraman (2004) recommended that researchers modify the 22 item

Table 2

Summary of Variables and Measurement Scales for the Questionnaire for the Study

Section of Questionnaire	Study Variables	Survey Items	Types of Measurement Scales
Filter question	Experience with online education	Question 1	Nominal, Simple dichotomous
1. Classification questions	Age, gender, academic program, experience with online education, name of institution	Questions 2-6	Nominal, Category
2. SERVQUAL perceptions	Service quality	Questions 7-28	Approximately Interval, seven-point numerical
3. Service quality dimension ranking	Service quality	Question 29	Ordinal, Constant-sum
4. Brand equity rating	Brand equity	Questions 30-41	Approximately Interval, seven-point numerical
5. Student satisfaction and Price	Satisfaction	Questions 42-43	Approximately Interval, seven-point numerical
6. Brand loyalty	Students future intentions	Questions 44-46	Approximately Interval, seven-point numerical

statements of the SERVQUAL scale for specific service settings. Christodoulides et al. (2006) recommended that researchers adapt and test the ORS Model in other service settings. The statements associated with the seven-point numerical scales and the constant sum scales in Sections 2, 3, and 4, reflected the general recommendations of the researchers. However, because the survey questions were adapted to the online education environment, challenges to internal validity, including criterion and construct validity, existed (Trochim & Donnelly, 2007; Zikmund, 2007). To counter possible challenges to validity and prior to administering the questionnaire, key informants in higher education reviewed the survey questionnaire and students conducted a pre-test. Review and pre-testing led to changes that clarified language.

Non-response bias was a threat to validity (Dillman, Smith, & Christian, 2009; Zikmund, 2007). To minimize non-response bias, a tailored design was used. According to Dillman et al. (2009), the tailored design method is an approach to improve response through

> ...development of survey procedures that work together to form the survey request and motivate various types of people to respond to the survey by establishing trust and increasing the perceived benefits of completing the survey while decreasing the expected costs of participation. (p. 38)

An introductory email or web site post invited students to participate in the survey. Follow-up emails and posts encouraged non-respondents to enter the survey web site and complete the online survey. See Appendix G for copies of the emails and online posts.

Student respondents entered an Internet web site of SurveyMonkey.com, a commercially available research company, to complete the survey. Respondents were

informed about the purposes and nature of the research, the ability to participate voluntarily, and the confidentiality of individual responses (Dissertation Handbook, 2009). Administration of the questionnaire was through web forms with check boxes (Zikmund, 2003). The research company captured data from each respondent and tabulated the raw data for analysis.

Operational Definition of Variables

Brand Equity (Z_1). The dependent variable for the study, brand equity was the student's evaluation of the value of the College measured by the adapted ORS model using approximately interval, seven-point numerical scales. For each respondent, the brand equity score was the average score of the 12 questions of the adapted ORS model.

Brand Loyalty (Y_1). A possible mediating variable for the study, brand loyalty was the behavioral consequences of service quality and marketing activities. Brand loyalty was a student's intentions to complete the academic program, recommend the College to others, and participate in additional academic programs.

Marketing Activities (X_3). An independent variable, not measured in the study but recognized in the research literature, marketing activities were attempts by College administrators to influence perceptions of brand equity by highlighting the benefits and features of the brand that are important to students.

Price (X_2). An independent variable for the study, price was the student's assessment of the value received for the tuition and fees paid, measured using an approximately interval, seven-point numerical scale.

Satisfaction (Y_2). A possible mediating variable for the research, satisfaction was the student's expression of positive or negative outcomes based on overall

evaluations of experiences at the College, measured using an approximately interval, seven-point numerical scale.

Service quality (X_1). An independent variable for the research, service quality was the student's perceptions of actual service delivered, measured by an adapted SERVQUAL scale using approximately interval, seven-point numerical scales. For each respondent, the service quality score was the average score of the 22 questions of the adapted SERVQUAL model, weighted by the ranking scores of the five dimensions of service quality.

Situational Factors (X_4). An independent variable, not measured in the study but recognized in the research literature, situational factors were individual and personal circumstances of students, such as health, work, or family influences, which might have affected perceptions of satisfaction with the College or brand equity of the College.

Data Collection, Processing, and Analysis

Administration of the questionnaire and data collection was through web forms at the Internet site of SurveyMonkey.com. SurveyMonkey.com captured data from each respondent and tabulated the raw data for analysis. SurveyMonkey.com provided data for downloading to Microsoft Excel and then to the Statistical Package for the Social Sciences (SPSS) Version 18. SPSS (Version 18.0) is a commercially available software package in common use for analysis of data from research studies in business and the social sciences (Norusis, 2006).

Analysis for the study included descriptive statistics, and univariate, bivariate, and multivariate inferential statistics. Descriptive statistics provided information about the frequencies and percentages of responses for all questions in the survey (Zikmund, 2003).

The analysis included cross-tabulations of data for relevant variables to examine basic data relationships (Zikmund, 2003). The analysis also included univariate statistics to examine the central tendencies and variations in the distributions of the individual variables (Zikmund, 2003). Table 3 is a summary of the descriptive and univariate statistics for the four types of scales in the survey questionnaire.

Table 3

Summary of Types of Scales and Statistics by Measurement Scale

Measurement Scale	Type of Scale	Descriptive and Univariate Statistics	Sections
Simple dichotomous	Nominal scale	Frequency counts and percentages; Mode	Filter question
Category	Nominal scale	Frequency counts and percentages; Mode	Section 1: Classification questions
Seven-point numerical	Approximately Interval scale	Frequency counts and percentages; Mean, median, and mode; Variance	Section 2: SERVQUAL perceptions Section 4: Brand equity rating Section 5: Student satisfaction Section 6: Student future intentions
Constant-sum	Ratio scale	Frequency counts and percentages; Mean, median, and mode; Variance; Relative magnitudes	Section 3: Service quality dimension ranking

The analysis included use of bivariate statistics to examine possible relationships between two variables, measured by approximately interval scales, and to test the research hypotheses, which postulated correlations between variables examined in the research study (Zikmund, 2003). The appropriate statistical test for possible linear

association was correlation analysis. For correlation analysis, the relationship between the variables must be linear and the distribution of each variable must approximate the normal distribution (Norusis, 2006; Pallant, 2010; Zikmund, 2003). Tests for linearity included plotting the data, examining the shape of the curve for linearity, and calculating the Pearson's correlation coefficient as a measure of the goodness of fit to a straight line (Norusis, 2006; Pallant, 2010; Zikmund, 2003). A test for normality was the Kolmogorov-Smirnov test of the residuals of the linear correlation (Norusis, 2006,; Pallant, 2010). Non-parametric tests, such as Chi-square or Spearman rank-order correlation, were appropriate for variables that did not exhibit linearity or normal distribution (Pallant, 2010; Zikmund, 2003). Spearman rank-order correlation was used to test association between variables based on rejecting the assumption of approximately interval scales for the seven-point scales and accepting that the scales were ordinal in nature (Norusis, 2006; "Ordinal Regression", n.d.; Pallant, 2010).

The analysis included use of bivariate statistics to examine possible effects of mediating and moderating variables on the correlations between independent and dependent variables. Partial correlation analysis was used to examine possible differences in student's perceptions of service quality or price and brand equity based on the mediating variables of brand loyalty and satisfaction (Pallant, 2010; Zikmund, 2003). Correlation analysis and the Spearman rank order coefficient were used to examine possible differences in student's perceptions of service quality or price and brand equity based on the moderating variables of student age, gender, degree program, academic program, and type of school (Pallant, 2010; Zikmund, 2003).

Multivariate statistics were used to examine the possible predictive effects of the

independent variables on the dependent variable (Pallant, 2010; Zikmund, 2003). Multiple regression analysis was used to determine the relative predictive power of the independent variables service quality and price and the mediating variables of brand loyalty and satisfaction on brand equity. Stepwise regression analysis was the appropriate statistical test, and SPSS (Version 18.0) was permitted to select and enter independent and mediating variables based on statistical principals and predictive power (Pallant, 2010). Observation of the histograms and study of the regression statistics confirmed assumptions about the normality of the distributions of the individual variables, the linearity and homoscedasticity of the relationships between independent and dependent variables, and multicollinearity between independent variables (Pallant, 2010).

Methodological Assumptions, Limitations, and Delimitations

The purpose of the study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model (Christodoulides et al., 2006). The study was a quantitative approach that relied on the prior knowledge claims of researchers who had developed and tested the two models. The new model to be tested relied on prior research that described the complex relationships among psychological and business performance variables leading to consumers' assessments about service quality and value of the brands. The major assumption was that the two theories of consumer behavior about service quality and brand equity were valid, and the positivist knowledge claims of the prior research were justified as theoretical underpinnings for the current research.

The Gaps Model of Service Quality was a well-researched and comprehensive model of service quality (Parasuraman et al., 1994). Service quality was measured using a 22-item SERVQUAL instrument, and each item was measured using a seven-point numerical scale assumed to have interval scale properties (Parasuraman et al., 1988). The researchers established the reliability and validity of the scale (Parasuraman et al., 1988). Reliability is the ability to measure consistent results that were free from error (Zikmund, 2003). The researchers examined reliability by independently testing and correlating results among four samples within the sampling framework (Parasuraman et al., 1988). Using a variation of split-half method testing (Zikmund, 2003), the researchers demonstrated high levels of reliability across all five dimensions of service quality (Parasuraman et al., 1988).

Validity is the ability of the measuring scale to produce an intended measure (Zikmund, 2003). Criterion validity is the ability to correlate the measuring scale with other measures of the same construct (Zikmund, 2003). Construct validity is that portion of internal validity defined as "the degree to which inferences can legitimately be made from the operationalizations in your study to the theoretical constructs on which those operationalizations are based" (Trochim & Donnelly, 2007, p. 56). External validity is the ability to measure from a sample and draw correct inferences about the population at large (Zikmund, 2003). The SERVQUAL scale was tested for criterion validity by examining the literature and relying on prior research to construct the SERVQUAL scale (Parasuraman et al., 1988). Internal validity of the SERVQUAL scale was examined (Parasuraman et al., 1988). Starting with a 97-item scale across 10 dimensions, the researchers used iterative surveys and factor analysis to discover a 34-item scale and

subsequently the 22-item scale across five dimensions used today to assess service quality (Parasuraman et al., 1988).

Since initial development, researchers have used SERVQUAL in retail and service industries and have reported on the reliability of service quality scores and the internal and external validity of the SERVQUAL scale. Researchers have also adopted the Gaps Model of Service Quality and SERVQUAL scale in higher education in a variety of service situations but have not published the results of studies that addressed possible relationships between service quality and brand equity. The Gaps Model of Service Quality and the SERVQUAL scale were popular and productive tools for managers to assess service quality and track changes in service performance in spite of some researchers' assertions of theoretical and methodological flaws (Coulthard, 2004; Sibley, 2007).

Researchers have questioned the internal and external validity and reliability of the 22-item SERVQUAL scale (Zeithaml & Parasuraman, 2004). The need to measure service quality as a difference of perceptions and expectations has been questioned, and assertions have been made that measuring perceptions alone had high diagnostic value (Cronin & Taylor, 1992 & 1994). The distinctness of the five service quality dimensions in certain service settings or in online applications was suspect (Sibley, 2007; Jun, 2007; Parasuraman et al., 2005; Zeithaml & Parasuraman, 2004). Some researchers noted cultural differences that may affect validity of SERVQUAL as an appropriate measurement tool for service quality outside the United States (Tsoukatos & Rand, 2006; Ugboma et al., 2004; Zeithaml & Parasuraman, 2004). For this study, the assumption was that the SERVQUAL instrument, when modified for the service environment of

online higher education, provided valid and reliable measurement of online service quality.

The ORS Model was a theory that related perceptions of online service to brand equity (Christodoulides et al., 2006). While research on online brand equity was less extensive than research on service quality, the foundational study was a sequential, exploratory mixed methods research study resulting in a model and 12-item scale tested for reliability and internal validity (Christodoulides et al., 2006). Depth interviews with experts knowledgeable about brand equity confirmed the initial scale with five dimensions (Christodoulides et al., 2006). Focus groups with consumers explored the five dimensions and identified 59 items for testing (Christodoulides et al., 2006). The researchers tested the 59 items in a web survey and examined reliability using the split-half method by randomly assigning the 375 responses into two groups and using one group to build the model and the other group to test the model (Christodoulides et al., 2006; Zikmund, 2003). Internal validity was examined using exploratory factor analysis, and after eliminating items to produce an 18-item scale, confirmatory factor analysis led toe 12-item scale to measure online retail brand equity (Christodoulides et al., 2006). Several possible challenges to external validity for the ORS Model were noted (Christodoulides et al., 2006). The study was performed wholly in the United Kingdom and might not be reproducible elsewhere (Christodoulides et al., 2006). The survey participants were known to have high levels of online shopping involvement, and the results might not be reproduced among less perceptive online shoppers (Christodoulides et al., 2006). In addition, the study focused on business-to-consumer shoppers only (Christodoulides et al., 2006). Since 2006, independent researchers have not validated

the ORS brand equity model, according to findings of the literature review for the study. For this study, the assumption was that the ORS scale, when modified for the service environment of online higher education, provided valid and reliable measurement of online brand equity.

Limitations are potential weaknesses in sampling design and data collection and analysis (Creswell, 2003). While it was not possible to identify all limitations during the design of this study, limitations that may have affected reliability and threaten external and internal validity were considered. The limitations occurred due to the survey methodology, choices of the working population and sampling methodology, and adaptations of the SERVQUAL and ORS scales to measure service quality and brand equity in the specific service environment of online higher education.

Reliability is the ability to measure consistent results that are free from error (Zikmund, 2003). In prior studies, researchers used the split-half method to test reliability of the SERVQUAL and ORS survey instruments to measure consistent results across all respondents (Christodoulides et al., 2006; Parasuraman et al., 1988; Zikmund, 2003). For this study, the split-half method was used to test the reliability of the measurement methodology. Mean scores for the independent variables of service quality and price, mediating variables of brand loyalty and satisfaction, and the dependent variable brand equity of two randomly assigned groups of respondents were analyzed to determine the reliability of the survey methodology.

Researchers also measure the reliability of the measurement scales to produce internally consistent results for each respondent. A common method of measurement was the Cronbach's Alpha coefficient that measured the average correlation of the items

of the SERVQUAL and ORS scales. Values of the Cronbach's Alpha of 0.70 or higher were acceptable and values of 0.80 or higher were preferred (Pallant, 2010). The Cronbach's Alpha coefficients found in this study were compared to the statistics from prior studies to assess reliability of the measurement scales.

The choice of the sampling frame was a limitation of the study. External validity is the ability to measure from a sample and draw correct inferences about the population at large (Zikmund, 2003). The population for this research was students enrolled in online courses at higher education institutions in the United States. The sampling frame, or working population, for the survey was students who had completed at least one online course at a college or university in the United States and were accessible by email or Internet web site. The study design and sampling methodology posed challenges to external validity and the ability to project results to the more than 18.2 million students in the United States (Digest of Education Statistics, 2009).

Students enrolled in a heterogeneous mix of online programs and courses at public and private, for-profit and not-for-profit colleges and universities throughout the country. Students were not homogeneous, but instead were diverse in their demographic and behavioral make-up. Heterogeneity of online programs and courses and student diversity may have led to differing online support service situations and students' reactions to service quality and brand equity. Therefore, the study design and sampling methodology could not account for the diverse population of students in colleges and universities in the United States, and this was a threat to external validity.

Choices in sampling methodology ameliorated but did not completely overcome threats to external validity (Zikmund, 2003). For example, one choice was a

methodology that sought a random sample of students enrolled in online courses. The choice may have led to results that were projectable to the population of college students in the United States. However, a methodology to produce a random sample would have been difficult to identify and execute in a cost-effective manner. Therefore, a second choice, to execute a sampling plan using a convenience sample of students drawn from email and Internet web sites, was chosen instead. A convenience sample was easier to execute, but projecting the results to all college students in the United States was more difficult.

Proportional quota sampling was a non-probability sampling method that permitted inferring findings of the study to the population of college students in the United States (Trochim & Donnelly, 2007; Zikmund, 2003). Age and gender were the two classification variables in the study. The proportions by age and gender of survey respondents were compared with the proportion by age and gender of all college students in the United States to determine if the proportions were approximately equal. The Chi-square goodness of fit test was the appropriate statistical test to determine that the proportions in the cells in the sample and the population were statistically the same. While the sample remained a non-probability sample, tentative conclusions were possible about how students of different ages and genders might assess service quality and brand equity.

Another limitation of the study was the adaptations required to use the SERVQUAL and ORS scales to measure service quality and brand equity in online higher education. The adaptations were a threat to construct validity, which is the operationalization or translation of an idea or concept into a concrete reality, phenomena,

or related hypotheses (Trochim & Donnelly, 2007; Zikmund, 2003). The constructs of service quality and brand equity were operationalized by adapting the 22-item SERVQUAL and 12-item ORS scales. Construct validity was threatened by the choices made in the translation of concepts in the theoretical construct into operationalizations.

The research examined the Gaps Model of Service Quality, a generalized model that relates five dimensions, or constructs, to the concept of service quality (Parasuraman et al. 1994). Prior research suggested high levels of construct validity. However, researchers customized the 22 statements that represented the five dimensions for each service setting. For example, the generalized model had four statements that represented the concept of tangibles, and one statement was "XYZ has modern-looking equipment" (Zeithaml & Parasuraman, 2004, p. 50). For the study, the statement was *My School has modern-looking web sites.* Construct validity was threatened if the choices made in rewording the 22 statements of the Gaps Model of Service Quality did not translate the five dimensions into correct operationalizations.

The study also examined the Online Retail/Service (ORS) Brand Equity Model (Christodoulides et al., 2006). While the authors cautioned about external validity, the authors asserted high levels of internal validity (Christodoulides et al., 2006). During the literature review, no confirmatory research existed to support the authors' contentions. No published research existed to support the model as a generalized approach to measuring brand equity in online retail and service settings. Furthermore, this study was in a high-involvement, high-cost online service business, while the original research was in a low-involvement, low-cost online retail business. While no research existed to offer guidance, the ORS Model was operationalized to use the 12-item scale to measure brand

equity in the study. For example, the generalized model had two statements that represented the concept of fulfillment, and one statement was "I got what I ordered from X's web site" (Christodoulides et al., 2006, p. 811). For the study, the statement was *I got the support services I expected using the school's web site*. Construct validity was threatened in the research if the 12 statements of the ORS Brand Equity Model did not translate the five constructs into correct operationalizations. To minimize possible threats to construct validity, key informants in higher education reviewed the operationalized statements and suggested possible wording changes. Students pretested the questionnaire and offered alternative wording for some statements.

Non-response bias was a possible limitation of the study. A tailored design method incorporating a series of email communications to the working population was used to encourage participation in the survey (Dillman et al., 2007). However, the question remained whether the assessments of service quality, brand equity, and other independent and mediating variables were different for those responding to the survey and those not responding. While a precise measure of differences between respondents and non-respondents could not be known (Trochim & Donnelly, 2007; Zikmund, 2003), possible direction and magnitude of non-response bias could be estimated by assuming that those who responded later were more like non-respondents than those who responded earlier (Sax, Gilmartin, & Bryant, 2003).

For the study, invitations to participate in the survey were sent by email and by posts to LinkedIn and Facebook. The invitation was followed by two reminder emails and reminder posts at approximately five and 15 day intervals. For the analysis, the respondents were grouped into three samples based on the timing of the response in

relation to the timing of the emails and posts. The mean scores for the dependent variable, brand equity, were compared among the groups using analysis of variance (Norusis, 2006). Results of the analyses led to better understanding of possible bias due to non-response.

Delimitations of a study are design decisions that narrow the scope of the research (Creswell, 2003). For the survey, choices were made about the scope of measurement of variables in the new model of service quality and brand equity in online service businesses. According to the literature review, researchers recognized marketing activities and situational factors as two possible independent variables that might influence consumer's attitudes about service quality and satisfaction (Aaker, 1991; Coulthard, 2004; Gronroos, 1984; Zeithaml & Parasuraman, 2004). For the study, marketing activities and situational factors were recognized as independent variables that might have had a relationship to consumer's perceptions of brand equity. Marketing activities are temporal and change based on seasonality, business changes, and planned promotional events. Situational factors are individual circumstances of consumers, such as health, work, or family influences, which might affect perceptions of satisfaction or brand equity. Measurements of the two independent variables and possible relationships to brand equity were beyond the scope of the study.

Choices in sampling methodology were further delimitations of the study. A methodology seeking a random sample of students enrolled in online courses that was projectable to the population of college students in the United States seemed ideal. However, a methodology to produce a random sample was difficult to identify and execute in a cost-effective manner. A sampling plan seeking responses from students

through an open population of students accessible through email and Internet web sites was chosen instead with an understanding of the limited ability to project results to all college students in the United States. Proportional quota sampling was chosen as a non-probability sampling method to permit inferring findings of the study to the population (Trochim & Donnelly, 2007; Zikmund, 2003). Inferences from the working population to the population of all college students in the United States were weak. However, the findings about relationships among service quality, brand equity, and possible mediating variables among a limited sample of online college students provided value for marketers, administrators, and researchers.

Ethical Assurances

The methodology of the research addressed ethical concerns arising from study participants, the educational institution, and Northcentral University. Ethical concerns in research involving human subjects stem from research designs, data collection strategies, and publication of findings that may pose risks to individuals or disadvantaged groups (Creswell, 2003). For example, disclosure of personal information or individual responses to sensitive questions may pose ethical concerns due to risk of humiliating an individual or creating potential for retaliation (Creswell, 2003).

The strategy of inquiry for the research was a quantitative survey asking opinions and assessments of support services quality, satisfaction, brand equity, and brand loyalty. The survey instrument included a solicitation of student information for classification purposes and for analysis of possible moderating effects among independent and dependent variables. Data collection methods did not identify individual students by name. The researcher ensured that findings did not disclose personal or sensitive

information about individuals or groups of students.

The methodology informed student participants about the purposes and nature of the research, the ability to participate voluntarily, and the confidentiality of individual responses (Dissertation Handbook, 2009). The dissertation committee and administration of the School of Business and Management of Northcentral University oversaw approval of the dissertation proposal and the final dissertation manuscript (Dissertation Handbook, 2009). The Institutional Review Board of Northcentral University approved the research prior to field work (Dissertation Handbook, 2009).

Summary

Studies indicated that marketers lacked information about possible relationships between service quality and online brand equity to assess whether consumers valued service quality, which might have been a source of brand differentiation for online service businesses (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). This study attempted to fill the gap in the literature by examining possible relationships between service quality and online brand equity. The research was a quantitative study of a new model that described possible relationships among service quality, online brand equity, and mediating variables of brand loyalty and satisfaction.

The population for the research was students enrolled in online courses at higher education institutions in the United States (Zikmund, 2003). The working population was students who had taken online courses and could be reached by email and web sites (Zikmund, 2003). The research design was a single-stage, cross-sectional study using a non-probability, quota sample. The research method was an online survey of students who responded from a list of approximately 800 email addresses, 150 LinkedIn contacts,

and 120 Facebook contacts. Snowball sampling increased the initial sampling frame. A tailored design method improved response and minimized non-response bias (Dillman et al., 2009; Zikmund, 2003). The survey instrument contained 46 questions and was available to respondents on SurveyMonkey.com, an Internet web site of a commercially available research company. Analysis for the survey was conducted using Microsoft Excel and SPSS and included descriptive statistics, univariate statistics, and bivariate statistics. Reliability of the survey instrument and potential threats to external and internal validity were considered in the survey and sampling methodologies and during data analysis. Proportional quota sampling permitted inferring findings of the study to the population of college students in the United States (Trochim & Donnelly, 2007; Zikmund, 2003). The age and gender of survey respondents were compared to age and gender of all college students in the United States (Digest of Education Statistics, 2009). The Chi-square goodness of fit test was used to determine that the proportions by age and gender of survey respondents were not statistically the same as the proportion by age and gender of all college students in the United States. Respondents were assigned random numbers, and a quota sample was drawn to yield a mix of ages and genders that was statistically the same as all college students in the United States. The quota sample was used to test the hypotheses and answer the research questions.

Steps were taken during the preparation of the research proposal and the field work to ensure ethical conduct. The research proposal was reviewed and approved by the School of Business and Management of Northcentral University and the University's Institutional Review Board (IRB). Fieldwork did not begin until IRB approval was secured. Student participants were informed about the purposes and nature of the

research, the ability to participate voluntarily, and the confidentiality of individual responses (Dissertation Handbook, 2009). The researcher ensured integrity of the data and did not disclosed personal data collected during the survey for the purposes of categorizing respondents and analyzing their responses

Service quality and brand equity are key concepts in the discipline of marketing (Aaker, 1991; Keller, 1993; Zeithaml et al., 2009; Zeithaml & Parasuraman, 2004). Published results of earlier studies had not addressed possible relationships between service quality and brand equity in online service businesses (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). The study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity and the possible mediating effects of consumer satisfaction and brand loyalty. Researchers and marketers may benefit from the findings of the study. Researchers will benefit from information that addressed a gap in the research literature and identified future opportunities for studies in service quality and brand equity in online businesses. Marketers will benefit from a better understanding of how the quality of services offered by their online businesses affected consumers' attitudes toward their brands and intentions to purchase their products or services. Furthermore, consumers may benefit when marketers and managers of online businesses offer better information about online- and human-delivered support services that affect consumers purchase decisions.

Chapter 4: Findings

The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The participants for the study were college students who had taken online college courses. The model for the study related service quality and other independent and mediating variables to brand equity in a new model that attempted to explain relationships among variables in online businesses. The dependent variable (Z_1) was brand equity, defined as the consumer's evaluation of the value of the brand and measured by the adapted twelve-item ORS scale (Christodoulides et al., 2006). The independent variables included service quality (X_1), defined as the consumer's perceptions of the actual services delivered and measured by the adapted twenty-two-item SERVQUAL scale (Parasuraman et al, 1988). Price (X_2), or the value for the money spent, was an additional independent variable measured during the study, and marketing activities (X_3) and situational factors (X_4) were independent variables that were not measured. Brand loyalty (Y_1) and satisfaction (Y_2) were mediating variables and were measured for the study.

The research questions for the study were:

RQ_1. To what extent, if any, did a consumer's perception of service quality, as measured by the Gaps Model, relate to a perception of brand equity, as measured by the ORS Model?

RQ_2. To what extent, if any, did price relate to a consumer's perception of brand

equity, as measured by the ORS model?

RQ_3. To what extent, if any, did a consumer's brand loyalty mediate, or influence, the possible relationship between service quality and brand equity?

RQ_4. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between service quality and brand equity?

RQ_5. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between price and brand equity?

RQ_6. To what extent, if any, did a consumer's characteristics, including age and gender, moderate the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction?

In this chapter, the data collection methods and analyses to assess the six research questions are presented. The results section includes a brief description of the data collection methods, summaries of the characteristics of the respondents, and the descriptive statistics of the dependent, independent, and mediating variables. The results section also contains presentation of the data of the inferential statistical tests associated with each research question and the hypotheses.

The evaluation of findings section of the chapter is an interpretation of the data analyses in the context of the six research questions and hypotheses. The theoretical framework of the study is summarized and discussed, based on the findings of the study. The impact of the study on the broader fields of study in service quality and brand equity in online environments is discussed. The chapter ends with a summary of the key points of the data collection and analysis.

Results

The participants for the study were students who had taken online courses at a college or university in the United States. The sample design was a convenience sample of students obtained through social contact, including email and the Internet web sites LinkedIn and Facebook. Respondents entered an online survey at SurveyMonkey.com and completed a questionnaire with 46 questions. Appendix A is the survey instrument. There were 436 respondents to the survey. The data obtained was downloaded into an Excel file and examined to determine whether respondents completed all questions and demonstrated diligence when answering the questions. Of the 436 responses, 15 were disqualified because the respondents had not taken an online course, 38 were eliminated because the respondents did not complete all questions, and 19 were judged to be affected by respondent indifference and were eliminated from consideration. Respondent indifference meant that students demonstrated no discrimination and entered the same answers for all items in the sections measuring service quality and brand equity.

The data from 364 qualified respondents were entered into SPSS (Version 18.0) statistical software. To test for non-response bias, the respondents were grouped into three samples based on the timing of the response, and the mean scores for the dependent variable, brand equity, and for all independent and mediating variables were compared among the groups using analysis of variance. The assumption of the test was that later respondents may have more in common with non-respondents (Norusis, 2006). Significantly different mean scores among the three groups might have been interpreted as a caution for non-response bias (Norusis, 2006). Interpretation of the results was complicated by the fact that respondents could invite others to participate in the survey,

and there was no way to assess which respondents were part of the original group or responded because they were recruited by other respondents. The results of the analysis of variance test were that all three groups had mean scores for all variables that were statistically the same with p-values ranging from 0.084 to 0.813. The results suggested no bias due to non-response.

The data were tabulated in SPSS (Version 18.0) by categories based on gender and age. Table 4 is a summary of the raw responses. Traditional age or younger students represented 32.1% of respondents, and women represented 49.7%.

Table 4

Frequencies and Percentages of Survey Respondents (n = 364) by Gender and Age

Gender	Age	*n*	%
MEN	Traditional Age or Younger (14-24 years old)	63	17.3
MEN	Younger Adults (25-34 years old)	48	13.2
MEN	Older Adults (35 years old and older)	72	19.8
WOMEN	Traditional Age or Younger (14-24 years old)	54	14.8
WOMEN	Younger Adults (25-34 years old)	40	11.0
WOMEN	Older Adults (35 years old and older)	87	23.9
TOTAL		364	100.0

The respondents were assigned random numbers that were used to select a proportional quota sample. In the quota sample, the proportions of men and women and

traditional age, young adult, and older adult students approximated the proportions reported by the Digest of Education Statistics (2010) and shown in Table 1. While the sample was not a random sample, the use of quota sampling permitted inferring findings to the population of more than 4.6 million students enrolled in online courses in the United States.

Table 5 is the quota sample compared to the proportions of students in the United States. The Chi-square goodness of fit test confirmed that the proportions in the quota

Table 5

Frequencies and Percentages of Quota Sample (n = 177) Compared to Students in Colleges and Universities in the United States: Fall Semester, 2009

Gender/Age	Quota Sample		National Profile	
	n	%	*N*(M)	%
MEN Traditional Age or Younger (14-24 years old)	47	26.6	5.416	26.5
MEN Younger Adults (25-34 years old)	18	10.2	2.070	10.1
MEN Older Adults (35 years old and older)	12	6.8	1.284	6.3
WOMEN Traditional Age or Younger (14-24 years old)	54	30.5	6.414	31.4
WOMEN Younger Adults (25-34 years old)	24	13.6	2.708	13.3
WOMEN Older Adults (35 years old and older)	22	12.4	2.537	12.4
TOTAL	177	100.0	20.428	100.0

Note: Source of data is Digest of Education Statistics (2010). M = number of students in millions.

sample were statistically the same as the proportions of students nationally with 95% confidence, $\chi^2(177, 5) = 0.13, p = 1.0$. Furthermore, an a priori power analysis at a confidence level of 95% indicated that a sample size of 155 was sufficient to yield 80% power given assumptions of normality of results, error from the mean of 0.2, and standard deviation of 1.0 on an approximately interval scale from 1 to 7 (Researcher's Toolkit, 2009; Trochim & Donnelly, 2007). The results approximated the assumptions of the power analysis, and the sample size for the quota sample was accepted.

Among respondents selected for the quota sample ($n = 177$), 6.2% indicated that they took online classes while pursuing an associates degree and 62.7% while pursuing a bachelor's degree. Among those pursuing graduate degrees, 20.3% of total respondents were pursuing a master's degree and 7.3% a doctoral degree. Students taking online courses as part of a non-degree program were 3.4%. Students in the quota sample reported the frequency of taking online classes as: 49.2%, one to two classes; 19.2%, three to five classes; 13.6%, six to 10 classes; and 18.1%, more than 10 classes.

Respondents were enrolled at two-year or four-year colleges and universities in the United States. The schools were further classified as public or private. Table 6 is a summary of the characteristics of colleges and universities for the quota sample. The majority of respondents was enrolled in four year schools (84.2%) and was from private colleges or universities (73.5%).

The second section of the questionnaire was a modified SERVQUAL scale with 22 items to measure perceptions of service quality. In prior studies, researchers had associated the 22 items with five dimensions of service quality (Parasuraman et al., 1988). The statement for each item of the SERVQUAL scale was modified to fit the

Table 6

Characteristics of Colleges and Universities of Survey Respondents

Type of Institution	*n*	%
Two-year schools	26	14.7
Four-year schools	149	84.2
Unknown	2	1.1
Public college or university	45	25.4
Private college or university	130	73.5
Unknown	2	1.1

specific service setting, according to the advice of Zeithaml and Parasuraman (2004). The measurement scale for each item was a seven-point numerical scale where respondents indicated "1" if they strongly disagreed, "7" if they strongly agreed, or used intermediate points on the scale. The assumption was that the seven-point numerical scales were quasi-interval, or approximately interval, scales (Trochim & Donnelly, 2007; Zikmund, 2003). The responses to the 22 items about service quality are shown in Appendix H. Mean scores and standard deviations of the 22 items are shown in Table 7. Mean scores ranged from a low of 4.56 for the item *Employees of the School are never too busy to respond to your requests* to a high of 5.64 for the item *Employees of the School are professional in telephone and email correspondence.* Standard deviations ranged from 1.493 for the item *The School has modern-looking web sites* to 1.789 for the item *The School has your best interests at heart.*

Table 7

Summary of Responses to SERVQUAL Items

SERVQUAL Item	Service Quality Dimension	*M*	*SD*
When the School promises to do something by a certain time, it does so.	Reliability	5.04	1.653
The School gives students individual attention.	Empathy	4.83	1.670
The School has modern-looking web sites.	Tangibles	5.48	1.493
Employees of the School tell students exactly when services will be performed.	Responsiveness	4.99	1.585
The behavior of employees of the School instills confidence in students.	Assurance	5.05	1.580
When students have a problem, the School shows a sincere interest in solving it.	Reliability	4.95	1.686
The School has operating hours convenient to all its students.	Empathy	5.30	1.640
The web site applications at the School are easy to use.	Tangibles	5.18	1.664
Employees of the School give you prompt service.	Responsiveness	4.89	1.559
You feel safe in your transactions with the School.	Assurance	5.44	1.619
The School performs the service right the first time.	Reliability	4.85	1.687
The School has employees who give you personal attention.	Empathy	5.24	1.652
Employees of the School are professional in telephone and email correspondence.	Tangibles	5.64	1.597
Employees of the School are always willing to help you.	Responsiveness	5.27	1.683
Employees of the School are consistently courteously with you.	Assurance	5.46	1.537

(continued)

Table 8

Summary of Responses to SERVQUAL Items (continued)

SERVQUAL Item	Service Quality Dimension	*M*	*SD*
The School provides its services at the time it promises to do so.	Reliability	5.11	1.668
The School has your best interests at heart.	Empathy	4.88	1.789
Materials associated with the service (such as information handouts and application forms) are visually appealing at the School.	Tangibles	5.10	1.569
Employees of the School are never too busy to respond to your requests.	Responsiveness	4.56	1.751
Employees of the School have the knowledge to answer your questions.	Assurance	5.09	1.676
The School insists on error-free records.	Reliability	4.77	1.728
Employees of the School understand your specific needs.	Empathy	4.88	1.754

In the third section of the questionnaire, respondents were asked to rate the importance of the five dimensions of service quality by assigning points to five statements describing the dimensions. Respondents used a constant sum scale with a total of 100 points. The mean points assigned, standard deviation, and rank are shown in Table 8. The statement associated with the assurances dimension had the highest mean score (20.90), and the statement associated with the tangibles dimension had the lowest mean score (18.51). The dispersion of responses was lowest for the statement associated with the responsiveness dimension ($SD = 7.645$) and was highest for the statement associated with the empathy dimension ($SD = 9.777$).

For each respondent, the items associated with each dimension of service quality

in section two were averaged and then weighted by the importance the respondent

Table 9

Importance of the Five Dimensions of Service Quality

Statement (Dimension)	*M*	*SD*	Rank
The appearance and professionalism of the School web site, materials, and personnel (Tangibles)	18.51	9.604	5
The ability of the School to perform the promised service dependably and accurately (Reliability)	20.55	8.863	2
The willingness of the School to help students and provide prompt service (Responsiveness)	19.77	7.649	4
The knowledge and courtesy of the School's employees and their ability to convey trust and confidence (Assurance)	20.90	8.287	1
The caring, individualized attention the School provides its students (Empathy)	20.49	9.777	3

assigned to the dimensions in section three. The weighted dimensions were then added and divided by 100 to yield a SERVQUAL score on a scale from 1 to 7. The SERVQUAL scores were summed and averaged for all respondents. Table 9 is the mean scores and standard deviations for each dimension of service quality and the weighted SERVQUAL scores. The highest mean score was for the tangibles dimension (5.37), and the lowest scores were for the reliability and responsiveness dimensions (4.94 and 4.93, respectively).

The fourth section of the questionnaire was a modified ORS scale with 12 items to measure perceptions of brand equity. In prior studies, researchers had associated the 12 items with five dimensions of brand equity (Christodoulides et al., 2006). The

Table 10

Scores for Dimensions of Service Quality and the Weighted SERVQUAL Score for All Respondents

SERVQUAL Dimension	*M*	*SD*
Tangibles	5.37	1.288
Reliability	4.94	1.409
Responsiveness	4.93	1.406
Assurance	5.26	1.412
Empathy	5.02	1.412
Weighted SERVQUAL score	5.11	1.310

Note: Individual dimension scores are unweighted means.

statement for each item of the ORS scale was modified to fit the specific service setting. The measurement scale for each item was a seven-point numerical scale where respondents indicated "1" if they strongly disagreed, "7" if they strongly agreed, or used intermediate points on the scale. The assumption was that the seven-point numerical scales were quasi-interval, or approximately interval, scales (Trochim & Donnelly, 2007; Zikmund, 2003). The responses to the 12 items about brand equity quality are shown in Appendix I. The mean scores and standard deviations of the 12 items are summarized in Table 10. The highest mean score (5.62) was for the item *I trust the School to keep my personal information safe*, associated with the trust dimension. The lowest mean score (4.49) was for the item *I feel as though the School really understands me*, associated with the emotional connection dimension. The dispersion was lowest for the item *I got the support services I expected from the School web site* (*SD* = 1.489), associated with the fulfillment dimension. The dispersion was the highest for the item *I feel like the School*

actually cares about me (*SD* = 1.759), associated with the emotional connection dimension.

Table 11

Summary of Responses to ORS Items

ORS Item	Brand Equity Dimension	*M*	*SD*
I feel related to the type of students who are the School's students.	Emotional connection	4.55	1.634
The School's web site provides easy-to-follow navigation.	Online experience	5.09	1.531
The School is willing and ready to respond to student needs.	Responsive service nature	5.08	1.492
I trust the School to keep my personal information safe.	Trust	5.62	1.503
I got the support services I expected from the School web site.	Fulfillment	5.16	1.489
I feel like the School actually cares about me.	Emotional connection	4.68	1.759
I never feel lost when navigating through the School's web site.	Online experience	4.63	1.731
The School's web site gives students the opportunity to "talk back" to the School.	Responsive service nature	4.64	1.639
I feel safe in my transactions with the School.	Trust	5.33	1.558
Support services are delivered by the time promised by the School.	Fulfillment	4.98	1.586
I feel as though the School really understands me.	Emotional connection	4.49	1.655
I am able to obtain the information I want without any delay at the School.	Online experience	4.59	1.687

For each respondent, the items associated with each dimension of brand equity quality in section four were averaged to determine a mean score. Unlike the

SERVQUAL scale in section two, respondents were not asked to rank and weight the five dimensions of brand equity. The brand equity scores were summed and averaged for all respondents. Table 11 is the mean scores for each dimension of brand equity and the mean and standard deviation of the brand equity scores. The highest mean score was for the trust dimension (5.47), and the lowest was for the emotional connection dimension (4.57). The dispersion of respondents scores was in a narrow range of $SD = 1.363$ for the responsive service nature dimension to $SD = 1.464$ for the trust dimension.

Table 12

Scores for Dimensions of Brand Equity and the Brand Equity Score for All Respondents

Brand Equity Dimension	*M*	*SD*
Emotional connection	4.57	1.441
Online experience	4.77	1.382
Responsive service nature	4.86	1.363
Trust	5.47	1.464
Fulfillment	5.07	1.410
Brand Equity Score	4.90	1.204

The fifth section of the questionnaire contained two statements that respondents were asked to evaluate. The measurement scale for both statements was a seven-point numerical scale where respondents indicated "1" if they strongly disagreed, "7" if they strongly agreed, or used intermediate points on the scale. As with the other seven-point numerical scales used in the study, the assumption was that the scales were quasi-interval, or approximately interval, scales (Trochim & Donnelly, 2007; Zikmund, 2003).

The first statement related to the respondent's perceptions of their experiences at the school and was a measure of satisfaction. Satisfaction was an outcome based on a consumer's evaluation of a service and comparisons of rewards and cost and was a mediating variable in the study. Table 12 is a summary of the responses to the statement about satisfaction.

Table 13

Scores and Summary Statistics for Satisfaction for All Respondents

Satisfaction	*n*	*M*	*SD*
Statement: I am satisfied with my overall experiences at the School.			
1 – Strongly disagree	9		
2	8		
3	12		
4 – Neither agree nor disagree	20		
5	43		
6	45		
7 – Strongly agree	40		
All Respondents	177	5.12	1.663

The second statement related to the respondent's perceptions of the price and value of the school. Price was the consumer's perception of the value received for the money paid and an independent variable in the study. The mean score (4.78) and standard deviation (1.905) of all responses to the statement about price and value are shown in Table 13.

The sixth and final section of the questionnaire contained three statements about the intentions of the respondent. Intentions were the respondent's evaluations of future

Table 14

Scores and Summary Statistics for Price for All Respondents

Price	*n*	*M*	*SD*
Statement: I am satisfied that the School offers a good value for the money I pay for tuition and fees.			
1 – Strongly disagree	18		
2	7		
3	22		
4 – Neither agree nor disagree	16		
5	39		
6	36		
7 – Strongly agree	39		
All Respondents	177	4.78	1.905

behaviors and were possible mediating variables in the study. The statements were measures of the brand loyalty of the respondent, and the results are shown in Table 14. The first statement was about the respondent's intentions to complete their program of study. The second statement measured the respondent's intentions to recommend the school to others seeking online education. The third statement asked whether the respondent intended to pursue additional educational programs through the institution. Once again, the measurement scale for both statements was a seven-point numerical scale where respondents indicated "1" if they strongly disagreed, "7" if they strongly agreed, or used intermediate points on the scale. The assumption was that the scales were quasi-interval, or approximately interval, scales (Trochim & Donnelly, 2007; Zikmund, 2003). The means (with standard deviations in parentheses) for the three statements were 5.62 (1.997), 4.97 (1.898), and 4.45 (1.980), respectively.

Table 15

Scores and Summary Statistics for Three Statements About Respondent's Intentions

	n	*M*	*SD*
Statement: I intend to complete my program of study through the School.			
1 – Strongly disagree	19		
2	2		
3	4		
4 – Neither agree nor disagree	18		
5	14		
6	22		
7 – Strongly agree	98		
All Respondents	177	5.62	1.997
Statement: I intend to recommend the School to friends or other students seeking online higher education.			
1 – Strongly disagree	15		
2	9		
3	12		
4 – Neither agree nor disagree	28		
5	32		
6	29		
7 – Strongly agree	52		
All Respondents	177	4.97	1.898
Statement: If I have the opportunity, I intend to pursue additional academic programs through the School.			
1 – Strongly disagree	23		
2	12		
3	13		
4 – Neither agree nor disagree	40		
5	31		
6	19		
7 – Strongly agree	39		
All Respondents	177	4.45	1.980

The purpose of the study was to examine possible relationships among service quality, brand equity, and other independent and mediating variables using survey methodology and a sample of students who had taken online courses from colleges and

universities in the United States. The new model for the study attempted to explain relationships among variables in online businesses. Service quality, an independent variable in the study, was measured using an adapted 22-item SERVQUAL scale (Parasuraman et al., 1994). Brand equity, the dependent variable in the study, was measured using an adapted 12-item ORS scale (Christodoulides et al., 2006). Other variables were measured using seven-point numerical scales and statements developed specifically for the study.

Tests were performed to determine if statistically significant differences in the dependent, independent, and mediating variables existed between the respondents selected for the quota sample and respondents not selected. The scales were seven-point numerical scales that were assumed to be approximately interval. No significant differences existed at 95% confidence between selected and not selected respondents for the mean scores of service quality, $t(362) = -0.17$, $p = 0.863$, brand equity, $t(362) = -0.85$, $p = 0.397$, satisfaction $t(362) = -0.85$, $p = 0.396$, price, $t(362) = -1.49$, $p = 0.137$, intention to recommend, $t(362) = -1.57$, $p = 0.119$, and intention to reenroll, $t(362) = 0.51$, $p = 0.608$. A significant difference at 95% confidence existed between selected and not selected responses for the mean scores of intention to complete the academic program, $t(362) = -2.48$, $p = 0.014$. The results are summarized in Table 15.

Tests were conducted to determine if statistically significant differences existed between demographic variables for respondents selected and not selected for the quota sample. The scales used were nominal scales, and the statistical test was the Pearson Chi-square test. Results of the Pearson Chi-square tests were that statistical differences at 95% confidence existed for age, $\chi^2(7, N = 364) = 117.76$, $p = 0.000$, gender, $\chi^2(1, N = X$

Table 16

Tests of Significance of Means of Dependent, Independent, and Mediating Variables Between Respondents Selected (n = 177) and Not Selected (n = 187) for Quota Sample

Variable	*t*	*p*
SERVQUAL	-0.172	0.863
ORS	-0.848	0.397
Satisfaction	-0.849	0.396
Price	-1.490	0.137
Intention to complete the degree program	-2.475	0.014
Intention to recommend to others	-1.565	0.119
Intention to reenroll in other programs	0.513	0.608

364) = 6.32, $p = 0.012$, degree program, $\chi^2(4, N = 364) = 49.54$, $p = 0.000$, and number of online courses taken, $\chi^2(3, N = 364) = 44.58$, $p = 0.000$. No statistical differences occurred between selected and not selected respondents for two versus four year institution, $\chi^2(2, N = 364) = 2.65$, $p = 0.265$, and public versus private institution, $\chi^2(2, N = 364) = 0.60$, $p = 0.741$. See Table 16.

Table 17

Tests of Significance of Proportions of Student Characteristics Between Respondents Selected (n = 177) and Not Selected (n = 187) for Quota Sample

Demographic Variable	χ^2	*p*
Age	117.76	0.000
Gender	6.32	0.012
Degree program	49.54	0.000
Number of online courses taken	44.58	0.000
Two vs. four year institution	2.65	0.265
Public vs. private institution	0.60	0.741

Confirmatory factor analysis (CFA) using principal components analysis (PCA) was conducted on the items to measure the five dimensions of the independent variable of

service quality. All 364 usable responses were subjected to factor analysis using SPSS (Version 18.0). Prior to performing the CFA, the suitability of the data for factor analysis was assessed. Examination of the correlation matrix revealed that all coefficients were 0.3 or greater. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.969 and was greater than the recommended value of 0.6 (Pallant, 2010). The Bartlett's Test of Sphericity was statistically significant ($p = 0.000$). The results of the two tests confirmed that the dataset was suitable for factor analysis (Pallant, 2010).

Confirmatory factor analysis (CFA) is a technique to assess whether a specific model or hypothesis concerning the underlying structure of the set of variables is true (Pallant, 2010). Principal components analysis (PCA) is a specific technique that attempts to produce a smaller number of independent linear combinations of the variables and explain, or account for, the most variability in the correlations of the data (Pallant, 2010). Based on the prior research of Parasuraman, Zeithaml, and Berry (1988), the hypothesis was that the PCA should yield five independent factors, or dimensions. Pallant (2010) recommended that Kaiser's criterion be applied to the PCA and that only components, or factors, with eigenvalues of 1.0 or more be accepted. Pallant (2010) further recommended that a scree plot be examined to find the number of factors that appeared prior to the shape of the curve changing to a horizontal line. Examination of the eigenvalues from the PCA of the 22-item scale that measures service quality revealed that only two components had values of 1.0 or more. The two components together accounted for 68.88% of the variability in the correlations of the data. Examination of the scree plot indicated that the break, or elbow, in the plot occurred at the second component. Examination of the component matrix revealed that all 22 items loaded

strongly on component one with correlations of 0.614 or higher. Four items loaded on component two with correlations ranging from 0.318 to 0.579. The loadings on components three, four, and five were few and weak.

The factor analysis using PCA provided the ability to rotate the components to aid in interpretation of results (Pallant, 2010). For the analysis, direct oblimin rotation was used. For the rotated solution, loadings on components two, three, and four were stronger with items correlated at 0.60 or higher. However, examination of the individual items did not reveal a pattern that demonstrated the dimensionality of the original SERVQUAL scale. For example, items that measured empathy had high correlations on components one and two, and items that measured tangibles had high correlations on components two and four.

In summary, the factor analysis suggested that only two components explained the variance in the data. Further examination of the five components solution demonstrated poor dimensionality with the original SERVQUAL scale. The conclusion of the analysis was that the data from this study did not match the five dimensional nature of the data from the original study of Parasuraman et al. (1988). Appendix J is the detail of the results of the factor analysis of the 22 items of the SERVQUAL scale.

Confirmatory factor analysis using principal components analysis (PCA) was also used to measure the five dimensions of the dependent variable of brand equity. Once again, all 364 usable responses were subjected to factor analysis using SPSS (Version 18.0). Prior to performing the CFA, the suitability of the data for factor analysis was assessed. Examination of the correlation matrix revealed that most coefficients were 0.3 or greater with only three inter-item correlations below this threshold. The Kaiser-

Meyer-Olkin Measure of Sampling Adequacy was 0.916 and was greater than the recommended value of 0.6 (Pallant, 2010). The Bartlett's Test of Sphericity was statistically significant ($p = 0.000$). The results of the two tests confirmed that the dataset was suitable for factor analysis (Pallant, 2010).

Based on the prior research of Christodoulides et al. (2006), the hypothesis was that factor analysis with PCA should yield five independent factors, or dimensions. Using Kaiser's criterion that eigenvalues should have values of 1.0 or higher (Pallant, 2010), examination of the eigenvalues from the PCA of the 12-item scale that measured brand equity revealed that only two components had values of 1.0 or more. The two components together accounted for 69.80% of the variability in the correlations of the data. Examination of the scree plot indicated that the break, or elbow, in the plot occurred at the second component. Examination of the component matrix revealed that 11 of the 12 items loaded strongly on component one with correlations of 0.631 or higher. Three items loaded on component two with correlations ranging from 0.422 to 0.585. The single item that did not load strongly on component one loaded strongly on component three with correlation of 0.713. Three items loaded weakly or negatively on component four, and only one item loaded on component five.

For the rotated solution using direct oblimin, loadings on components two, three, and five were stronger with individual items correlated at 0.926 or higher. All items that loaded on component four were negative. Examination of the individual items did not reveal a pattern that demonstrated the dimensionality of the original ORS scale. For example, items that measured emotional connection had high correlations on components one and three.

The factor analysis suggested that only two factors explained the variance in the data. Further examination of the five factor solution demonstrated poor dimensionality with the original ORS, or brand equity, scale. The conclusion of the analysis was that the data from this study did not match the five dimensional nature of the data from the original study of Christodoulides et al. (2006). Appendix K is the detail of the results of the factor analysis of the 12 items of the ORS scale.

The reliability of the survey instrument to measure consistent results free from error was tested using the split-half method (Zikmund, 2003). All respondents were assigned random numbers and then split into two groups. The mean scores for the dependent variable, brand equity, and all independent and mediating variables for the two groups were compared and tested using the two-sample test of means. The results at 95% confidence were that the mean scores for all variables were statistically the same for the randomly selected split-halves. The survey instrument was judged to measure consistent results across all respondents. The t- and p-values for all t tests are summarized in Table 17.

The reliability of the two scales adapted from previous research and used in the survey instrument was tested using the Cronbach's Alpha coefficient. The SERVQUAL scale was adapted and used in section two of the survey instrument, and the ORS scale was adapted and used in section four. The SERVQUAL scale, a 22-item, seven-point numerical scale based on the research of Parasuraman et al. (1988), measured service quality. The scale items were modified to fit the service situation in the research, and the reliability of the scales was tested using the Cronbach's Alpha coefficient calculated by SPSS (Version 18.0). According to Parasuraman et al. (1988), the Cronbach's Alpha

coefficient for the 22-item SERVQUAL scale ranged from 0.87 to 0.90 for four different

Table 18

Results of Split-Half Testing for All Respondents (N = 364)

	Group A		Group B		Two-Sample Test of Means	
Variable	*M* (*n* = 182)	*SD*	*M* (*n* = 182)	*SD*	*t*	*p* at 95% confidence
Brand equity	4.99	1.34	4.93	1.13	0.41	0.682
Service quality	5.08	1.48	5.16	1.21	-0.56	0.577
Price	4.89	1.94	4.87	1.78	-0.39	0.694
Satisfaction	5.17	1.84	5.22	1.49	-0.28	0.778
Intention to complete	5.86	1.94	5.88	1.78	-0.11	0.911
Intention to recommend	5.14	1.99	5.10	1.69	-0.17	0.865
Intention to reenroll	4.37	2.18	4.42	1.89	-0.21	0.837

samples. In this study, the Cronbach's Alpha coefficient was 0.973. According to Pallant (2010), values of the Cronbach's Alpha of 0.70 or higher were acceptable and values of 0.80 or higher were preferred.

The ORS scale was a 12-item, seven-point numerical scale based on the research of Christodoulides et al. (2006) and measured brand equity. The original ORS model for brand equity was constructed and tested using structural equation modeling (SEM) and the LISREL software, and the researchers reported high levels of reliability and validity of the 12-item, five dimension scale (Christodoulides et al., 2006). The statistics reported

by the researchers were not directly comparable to the statistics from the factor analysis reported in this research study. The Cronbach's Alpha coefficient in this study was 0.937.

The hypothesis tests for this study depended upon correlation analysis of independent and dependent variables. Correlation analysis required the data to be measured using interval or ratio scales, individual responses to be drawn randomly from the population and independent, and normality in the shape of the distribution of the data (Pallant, 2010). The seven-point numerical scales used in the survey instrument were considered to be approximately interval. The individual responses were obtained using a convenience sample and did not represent a random sample of the population of all students in colleges and universities in the United States. Quota sampling was an attempt to overcome this limitation, and the quota sample was statistically representative of students in colleges and universities in the United States based on gender and age. The responses in the quota sample were independent.

To test for normality, the distributions of the responses for the independent variables of service quality and price, the mediating variables of brand loyalty and satisfaction, and the dependent variable brand equity were examined using the tabular data in Appendices H and I and Tables 12, 13, and 14. In addition, the data was displayed in histograms for further review. Examination of the histograms suggested that all variables were skewed to the left and the distributions did not appear to be normal. Using functions of SPSS (Version 18.0), outliers were identified and eliminated for service quality and brand equity. The Kolmogorov-Smirnov statistic, which assesses the normality of the distributions of the data, was calculated for every variable and returned

values that suggested the distributions were not normal ($p \leq 0.05$) at 95% confidence (Pallant, 2010). Pallant (2010) observed that the Kolmogorov-Smirnov test often suggests violation of normality in large samples. Further examination of the Normal Q-Q and Detrended Normal Q-Q plots revealed reasonably straight lines and clustering around the zero line for service quality ($n = 166$) and brand equity ($n = 166$) but not for the other independent and mediating variables (Pallant, 2010). Based on the analysis, the decision was to treat the service quality and brand equity variables as normally distributed. All other variables were treated as not normally distributed.

Each research question was addressed using correlation analysis. Correlation analysis uses inferential statistical tests to measure the strength and direction of the relationship between two variables (Norusis, 2006; Pallant, 2010). Correlation analysis required that data be from scales that were at least ordinal in nature, and the strength of the correlation was measured using the Pearson product-moment correlation coefficient (r) for interval- or ratio-scaled data and the Spearman Rank Order Correlation (r_s) for ranked data from ordinal scales (Norusis, 2006; Pallant, 2010). Additional requirements were that data was related pairs from the same subject, the observations were independent, the distribution of each variable was normal, the relationship between the two variables was linear, and the variability in scores for one variable was similar for all values of the other variable [homoscedasticity] (Pallant, 2010). For this study, data was related pairs from the same subject and observations were independent. Analysis of the normality of the data suggested that service quality and brand equity were reasonably normal and the other independent and mediating variables were not normally distributed. The linearity and homoscedasticity were examined for each combination of variables

using scatterplots and are discussed along with the results for each research question.

RQ_1. To what extent, if any, did a consumer's perception of service quality, as measured by the Gaps Model, relate to a perception of brand equity, as measured by the ORS Model?

$H1_0$. There is no relationship between a consumer's perception of service quality and perception of brand equity.

$H1_a$. There is a significant relationship between a consumer's perception of service quality and perception of brand equity.

The variable service quality was operationalized as the weighted average of responses to 22 questions in Section 2 with weighting established by responses in Section 3 of the survey instrument. The distribution of responses to the 22 questions in Section 2 are in Appendix H, and the descriptive statistics associated with the items and dimension of service quality are displayed in Tables 7, 8, and 9. The variable brand equity was operationalized as the average of responses to 12 questions in Section 4 of the survey instrument. The distribution of responses to the 12 questions is in Appendix I, and the descriptive statistics associated with the items and dimensions of brand equity are displayed in Tables 10 and 11.

The relationship between service quality and brand equity was analyzed using correlation analysis in SPSS (Version 18.0). The scatterplot was examined, and the distribution of the data displayed adequate levels of linearity and homoscedasticity. There was a strong, positive correlation between the two variables, $r(176) = 0.88$, $p = 0.000$ and $r_s(176) = 0.87$, $p = 0.000$. High levels of service quality were associated with high levels of brand equity. The null hypothesis that service quality and brand equity

were not related was rejected. The alternative hypothesis that service quality and brand equity were related was accepted at 95% confidence.

RQ_2. To what extent, if any, did price relate to a consumer's perception of brand equity, as measured by the ORS model?

$H2_0$: There is no relationship between price and a consumer's perception of brand equity.

$H2_a$: There is a significant relationship between price and a consumer's perception of brand equity.

The variable price was the respondent's assessment of whether the institution provided a good value for the money. Price was operationalized as the response to question 42 in Section 5 of the survey instrument. The distribution of responses and descriptive statistics associated with price are in Table 13. The relationship between price and brand equity was analyzed using correlation analysis in SPSS (Version 18.0). The scatterplot was examined, and the distribution of the data displayed some linearity and homoscedasticity. The price variable was assumed to be not normally distributed and was ordinal in nature. There was a strong, positive correlation between the two variables, $r_s(176) = 0.68, p = 0.000$. High levels of belief in the value the institution provided for the money were associated with high levels of brand equity. The null hypothesis that price and brand equity were not related was rejected. The alternative hypothesis that price and brand equity were related was accepted at 95% confidence. The lack of normality in the price variable is a limitation on the interpretation of the Spearman's rho coefficient and the hypothesis test.

RQ_3. To what extent, if any, did a consumer's brand loyalty mediate, or influence, the

possible relationship between service quality and brand equity?

$H3_0$. There are no mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H3_a$. There are significant mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

The variable brand loyalty was operationalized by three questions numbered 43, 44, and 45 in Section 6 of the survey instrument. The three questions assessed the respondent's loyalty to the institution as intentions to complete the academic program, recommend the institution to others, and reenroll in a future program. The distribution of responses and descriptive statistics associated with the three questions about the respondent's intentions are in Table 14. For the purposes of the analysis, the data from the three questions were treated as three separate variables. Scatterplots of the three mediating variables when plotted against brand equity demonstrated poor linearity and homoscedasticity. The three mediating variables were each assumed to have not normal distributions. The possible mediating effects of the three variables that represented brand loyalty between service quality and brand equity was analyzed using partial correlation analysis in SPSS (Version 18.0). There was a strong, positive correlation between service quality and brand equity, controlling for the mediating effects of the three brand loyalty variables, $r_{ab.c}(176) = 0.81, p = 0.000$. High levels of service quality corresponded to high levels of brand equity. An examination of the zero order correlation, $r(176) = 0.88, p = 0.000$, suggested that controlling for the three measures of brand loyalty had little effect on the strength of the relationship between service quality and brand equity. The null hypothesis that there was no mediating effect of brand loyalty

on service quality and brand equity was accepted at 95% confidence, and the alternative hypothesis was rejected. The lack of normality, poor linearity, and poor homoscedasticity in the three variables representing brand loyalty were limitations on the interpretation of the partial correlation coefficient and the hypothesis test.

Although not a part of research question 3, the model postulated possible mediating effects of the three variables that represented brand loyalty between satisfaction and brand equity. Partial correlation analysis in SPSS (Version 18.0) was used to test for possible mediating effects. There was a strong, positive correlation between satisfaction and brand equity, $r(176) = 0.81, p = 0.000$, when not controlling for the mediating effects of brand loyalty. An examination of the partial correlation, where the correlation coefficient was $r_{ab,c}(176) = 0.617, p = 0.000$, suggested that controlling for the three measures of brand loyalty had some effect on the strength of the relationship between satisfaction and brand equity. The conclusion was that there was some mediating effect of brand loyalty on satisfaction and brand equity. The lack of normality, poor linearity, and poor homoscedasticity in the three variables representing brand loyalty were limitations on the interpretation of the partial correlation coefficient and the hypothesis test.

RQ_4. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between service quality and brand equity?

$H4_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H4_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

The variable satisfaction was operationalized by question number 41 in Section 5 of the survey instrument. The distribution of responses and descriptive statistics associated with satisfaction are in Table 12. A scatterplot of the mediating variable satisfaction when plotted against brand equity demonstrated reasonable levels of linearity and homoscedasticity. The data associated with satisfaction was assumed to have a not normal distribution. The possible mediating effect of satisfaction between service quality and brand equity was analyzed using partial correlation analysis in SPSS (Version 18.0). There was a strong, positive correlation between service quality and brand equity, controlling for the mediating effects of satisfaction, $r_{ab,c}$ (176) = 0.70, p = 0.000. High levels of service quality corresponded to high levels of brand equity. An examination of the zero order correlation, where the correlation coefficient was $r($ 176) = 0.88, p = 0.000, suggested that controlling for satisfaction had some effect on the strength of the relationship between service quality and brand equity. The null hypothesis that there was no mediating effect of satisfaction on service quality and brand equity was rejected at 95% confidence, and the alternative hypothesis was accepted. The lack of normality in the variable satisfaction was a limitation on the interpretation of the partial correlation coefficient and the hypothesis test.

RQ_5. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between price and brand equity?

$H5_o$: There are no mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H5_a$: There are significant mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

Satisfaction was also postulated to have a mediating effect between a respondent's assessment of the value of the institution for the money paid, or price, and brand equity. The data associated with satisfaction was assumed to have a not normal distribution. The possible mediating effect of satisfaction between price and brand equity was analyzed using partial correlation analysis in SPSS (Version 18.0). There was a very weak, positive correlation between price and brand equity, controlling for the mediating effects of satisfaction, $r_{ab.c}(176) = 0.18, p = 0.000$. An examination of the zero order correlation, where the correlation coefficient was $r(176) = 0.696, p = 0.000$, suggested that controlling for satisfaction had an effect on the strength of the relationship between price and brand equity. The null hypothesis was rejected. The alternative hypothesis of a mediating effect of satisfaction on price and brand equity was accepted at 95% confidence. The lack of normality in the variable satisfaction was a limitation on the interpretation of the partial correlation coefficient and the hypothesis test.

RQ_6. To what extent, if any, did a consumer's characteristics, including age and gender, moderate the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction?

$H6_o$: There are no moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

$H6_a$: There are significant moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

The data was examined using correlation analysis in SPSS (Version 18.0) to

determine if the different levels of moderating variables demonstrated significantly different relationships. The moderating variables that were studied were age, gender, degree program, number of online courses taken, two year versus four year institution, and public versus private institution. In addition, the age-gender group, a combination of the two variables of age and gender used for the quota sample, was examined. The Pearson correlation coefficient for normally distributed data and the Spearman rank order coefficient for not normal data were both reviewed.

There were eight age categories, and seven of the eight demonstrated statistically significant relationships at 95% confidence between service quality and brand equity using the Spearman rank order coefficient (range from 0.782 to 1.000). The eighth category contained one observation and could not be analyzed. The conclusion was that there was no difference in the relationship between service quality and brand equity when considering the age of the respondents. The results are shown in Table 18.

The Spearman rank order coefficient for men ($n = 77$) was 0.865 and for women ($n = 100$) was 0.863. The correlation coefficient was statistically significant at 95% confidence with a p-statistic of 0.000. The conclusion was that there was no difference in the relationship between service quality and brand equity when considering the gender of the respondents.

There were six categories of age and gender that were created from the raw data to correspond to published statistics on college and university students in the United States and were used to draw the quota sample. The Spearman rank order coefficients ranged from 0.785 to 0.935 and all were statistically significant at 95% confidence. The conclusion was that there was no difference in the relationship between service quality

Table 19

Correlation Coefficients for Service Quality and Brand Equity when considering Age of Respondents

		Spearman Rank Order Correlation	
Age of Respondents	*n*	r_s	*p*
Less than 18	4	1.000	0.000
18-24 years old	97	0.858	0.000
25-29 years old	23	0.813	0.000
30-34 years old	19	0.913	0.000
35-39 years old	10	0.782	0.008
40-49 years old	13	0.898	0.000
50-59 years old	10	0.721	0.019
60 years and older	1	na	na

Note: na – Statistic was not computed due to small sample size.

and brand equity when considering the age and gender categories created during the analysis of the respondent data. See Table 19.

Table 20

Correlation Coefficients for Service Quality and Brand Equity when considering Age and Gender of Respondents

Gender and Age of Respondents		Spearman Rank Order Correlation	
	n	r_s	*p*
MEN Traditional Age or Younger (14-24 years old)	47	0.791	0.000
MEN Younger Adults (25-34 years old)	18	0.935	0.000
MEN Older Adults (35 years old and older)	12	0.909	0.000
WOMEN Traditional Age or Younger (14-24 years old)	54	0.906	0.000
WOMEN Younger Adults (25-34 years old)	24	0.824	0.000
WOMEN Older Adults (35 years old and older)	22	0.785	0.000

There were five categories of degree programs taken by respondents. The Spearman rank order coefficient ranged from 0.627 to 0.943 and was statistically

significant for all five categories. The conclusion was that that there was no difference in the relationship between service quality and brand equity when considering the degree program taken by the respondent. The results are shown in Table 20.

Table 21

Correlation Coefficients for Service Quality and Brand Equity when considering degree Program taken by Respondents

Degree Program		Spearman Rank Order Correlation	
	n	r_s	*p*
Non-degree program	6	0.943	0.005
Associates degree	11	0.868	0.001
Bachelor's degree	111	0.900	0.000
Master's degree	36	0.813	0.000
Doctoral degree	13	0.627	0.022

The number of online courses taken was evaluated to determine if this variable had a moderating effect on the relationship between service quality and brand equity. In the four categories of number of online courses taken, Spearman rank order coefficients ranged from 0.776 to 0.887 and all were statistically significant at 95% confidence. The conclusion was that that there was no difference in the relationship between service quality and brand equity when considering the number of online courses taken by the respondent. See Table 21.

The types of institutions attended by respondents were evaluated in two ways to determine whether there were effects on the relationship of service quality and brand equity. First, institutions were divided into two year versus four year colleges and

Table 22

Correlation Coefficients for Service Quality and Brand Equity when considering Number of Online Courses Taken by Respondents

Number of Online Courses Taken		Spearman Rank Order Correlation	
	n	r_s	*p*
1 to 2 courses	87	0.887	0.000
3 to 5 courses	34	0.875	0.000
6 to 9 courses	24	0.776	0.000
10 or more courses	32	0.873	0.000

universities. The Spearman rank order coefficient for two year institutions was 0.901 (n = 26) and was statistically significant at 95% confidence (p = 0.000). For four year institutions (n = 149), the Spearman rank order coefficient for four year institutions was 0.860 and was statistically significant at 95% confidence (p = 0.000). Two responses could not be analyzed because the classification of the schools could not be determined. The conclusion was that that there was no difference in the relationship between service quality and brand equity when considering whether the institution was two year or four year.

Next, the institutions were divided into public versus private institutions. The Spearman rank order coefficient for public institutions (n = 45) was 0.854 and was statistically significant at 95% confidence (p = 0.000). For private institutions (n = 149), the Spearman rank order coefficient for four year institutions was 0.876 and was statistically significant at 95% confidence (p = 0.000). Two responses could not be analyzed because the classification of the schools could not be determined. The

conclusion was that that there was no difference in the relationship between service quality and brand equity when considering whether the institution was public or private.

After examination of the possible moderating effects of the variables of age, gender, age-gender group, degree program, number of online courses taken, two year versus four year institution, and public versus private institution, the conclusion was that there were no moderating effects demonstrated by the correlation analysis. The null hypothesis was accepted at 95% confidence. The alternative hypothesis was rejected. There were no moderating effects of the respondent's characteristics on the relationships between service quality and brand equity.

Although the proposition was rejected that respondent characteristics had an effect on the relationship between service quality and brand equity, respondents reported wide ranging differences in their evaluations of the brand equity of their educational institutions. To investigate further, respondents were assigned to one of two groups based on ORS scores to study the possible relationships between the ORS scores and perceptions of service quality, price, satisfaction, and brand loyalty. Students reporting lower ORS scores between 1.00 and 3.99 were assigned to one group ($n = 33$), and students reporting higher ORS scores between 4.00 and 7.00 were assigned to another group ($n = 144$). The mean brand equity score was 3.04 for the students reporting lower ORS scores and 5.33 for students reporting higher ORS scores. See Table 22 for means and standard deviations for all variables.

The mean scores of independent and mediating variables were examined to determine if there were differences between students who reported lower (1.00 to 3.99) versus higher (4.00 to 7.00) brand equity scores. The two groups were subjected to t-tests

Table 23

Means and Standard Deviations for All Variables for Lower ORS Scores (n = 33) and Higher ORS Scores (n = 144)

Variables	Lower ORS Scores		Higher ORS Scores	
	M	SD	M	SD
ORS score	3.04	0.665	5.33	0.835
SERVQUAL	3.16	0.896	5.55	0.929
Satisfaction	2.82	1.402	5.65	1.209
Price	2.52	1.372	5.30	1.609
Intention to complete degree program	4.06	2.609	5.98	1.641
Intention to recommend to others	3.18	1.862	5.38	1.659
Intention to reenroll	3/09	1.826	4.76	1.885

of the differences of mean scores using SPSS (Version 18.0). The mean scores of students reporting lower versus higher brand equity scores were statistically different on all independent and mediating variables at 95% confidence. See Table 23.

Table 24

Tests of Significance of Mean Scores of Independent and Mediating Variables Between Students with Lower ORS Scores (n = 33) and Higher ORS Scores (n = 144)

Variable	*t*	*p*
SERVQUAL score	-13.410	0.000
Satisfaction score	-11.755	0.000
Price score	-9.196	0.000
Intention to Complete score	-4.045	0.000
Intention to Recommend score	-6.692	0.000
Intention to Reenroll score	-4.625	0.000

The two groups were subjected to a Chi-square test for independence using SPSS (Version 18.0) to determine if the proportions of student characteristics were different. There were no significant differences at 95% confidence between the student characteristics of students with lower ORS scores and students with higher ORS scores. See Table 24.

Table 25

Tests of Significance of Proportions of Student Characteristics for Lower ORS Scores (n = 33) and Higher ORS Scores (n = 144)

Demographic Variable	X^2	*df*	*p*
Age	1.924	7	0.964
Gender	1.059	1	0.303
Degree program	2.543	4	0.637
Number of online courses taken	2.761	3	0.430
Two vs. four year institution	1.283	2	0.526
Public vs. private institution	1.429	2	0.490

Finally, the mean scores of the SERVQUAL dimensions were examined to determine if the scores were statistically different between the students who reported lower (1.00 to 3.99) versus higher (4.00 to 7.00) brand equity scores. See Table 25. For students reporting lower brand equity scores, SERVQUAL dimension scores ranged from 2.985 (responsiveness) to 3.785 (tangibles). For students reporting higher brand equity scores were higher and ranged from 5.363 (reliability) to 5.734 (tangibles).

Table 26

Means and Standard Deviation of SERVQUAL Dimension Scores for Lower ORS Scores (n = 33) and Higher ORS Scores (n = 144)

SERVQUAL Dimension	Lower ORS Scores		Higher ORS Scores	
	M	*SD*	*M*	*SD*
Tangibles	3.785	1.506	5.734	0.905
Reliability	3.115	0.942	5.363	1.139
Responsiveness	2.985	0.943	5.373	1.079
Assurance	3.220	1.166	5.726	0.987
Empathy	3.030	1.051	5.482	1.039

The two groups were subjected to t-tests of the differences of mean scores using SPSS (Version 18.0). The mean SERVQUAL dimension scores of students reporting

lower versus higher brand equity scores were statistically different on all five dimensions of the service quality scale at 95% confidence. The results of the independent samples t-test are summarized in Table 26.

Table 27

Tests of Significance of Mean Scores of the SERVQUAL Dimensions Between Students with Lower ORS Scores (n = 33) and Higher ORS Scores (n = 144)

SERVQUAL Dimension	*t*	*df*	*p*
Tangibles	7.147	175	0.000
Reliability	10.532	175	0.000
Responsiveness	11.728	175	0.000
Assurance	12.710	175	0.000
Empathy	12.200	175	0.000

In addition to correlation analysis to test the hypotheses and examine possible relationships between variables, regression analysis was used to examine the predictive power of independent variables on brand equity, the dependent variable (Pallant, 2010; Zikmund, 2003). Stepwise regression analysis was chosen as the appropriate statistical technique, and SPSS (Version 18.0) selected the variables and order of selection based on predictive power (Pallant, 2010). Regression analysis required assumptions about the sample size and the effects of outliers as well as the multicollinearity, normality, linearity, and homoscedasticity of the data (Pallant, 2010). The sample size should have been sufficiently large to permit generalizability of the data and should have conformed to the equation $N > 50 + 8m$, where m equaled the number of independent variables (Pallant, 2010). For this study, there were six variables, and $N = 98$. The size of the quota sample ($n = 177$) was sufficient to permit generalizability.

Using functions of SPSS (Version 18.0), outliers were identified and eliminated

for service quality and brand equity. A test for normality was the Kolmogorov-Smirnoff statistic, which was calculated for every variable and returned values that suggested the distributions were not normal ($p \leq 0.05$) at 95% confidence (Pallant, 2010). Pallant (2010) also observed that the Kolmogorov-Smirnov test often suggested violation of normality in large samples. Examination of the Normal Q-Q and Detrended Normal Q-Q plots revealed reasonably straight lines and clustering around the zero line for service quality ($n = 166$) and brand equity ($n = 166$) but not for the other independent and mediating variables (Pallant, 2010). Based on the analysis, the decision was to treat the service quality and brand equity variables as normally distributed. All other variables were treated as not normally distributed. Lack of normality was a possible limitation in the interpretation of the results of the multiple regression analysis. The linearity and homoscedasticity were examined using scatterplots for each combination of independent variable and brand equity, the dependent variable. For the relationships between service quality and brand equity and between satisfaction and brand equity, analysis of the scatterplots yielded adequate levels of linearity and homoscedasticity. For the relationships between price and brand equity, analysis of the scatterplots suggested some levels of linearity and homoscedasticity, while examination of the scatterplots for the three measures of brand loyalty and brand equity suggested poor levels of linearity and homoscedasticity. Lack of linearity and homoscedasticity in some relationships of independent and dependent variables was a possible limitation in the interpretation of the results of the multiple regression analysis.

Multicollinearity occurs when independent variables are highly correlated with correlation coefficients $r > 0.90$ (Pallant, 2010). In addition, Pallant (2010) suggested

that independent variables should correlate with the dependent variable with correlation coefficients $r > 0.30$. Furthermore, collinearity diagnostics performed during the multiple regression analysis in SPSS (Version 18.0) should yield a tolerance of greater than 0.10 and a variance inflation factor (VIF) of less than 10 (Pallant, 2010). Tolerance is a measure of the variability of one independent variable not explained by all other independent variables (Pallant, 2010). The VIF is the inverse of tolerance [1 divided by tolerance] (Pallant, 2010). Pallant (2010) warned that examination of the individual correlations between independent variables and the dependent variable, tolerance, and VIF should each be evaluated. Pallant (2010) further suggested that using two variables with bivariate correlations of $r > 0.70$ was not advised.

Appendix L is the output of the stepwise regression analysis from SPSS (Version 18.0). The stepwise regression yielded two models. The first model was a regression of the independent variable service quality on the dependent variable brand equity with a coefficient of determination $r^2 = 0.774$, $F(1, 175) = 598.81$, $p = 0.000$. Service quality explained 77.4% of the variance in brand equity. The second model was a regression of the independent variables service quality and satisfaction on the dependent variable brand equity. For the second model, the coefficient of determination $r^2 = 0.825$, $F(1, 174) = 53.62$, $p = 0.000$. The second model improved the predictive power of the first by 5.3%.

The second model was evaluated further using Pallant's (2010) criteria and suggestions. The bivariate correlation of service quality and satisfaction $r = 0.751$. The tolerance and VIF statistics for service quality and satisfaction met Pallant's (2010) criteria. Collinearity between the two variables was not a concern. However, the bivariate correlation coefficients of service quality and satisfaction with brand equity

were $r = 0.880$ and $r = 0.813$, respectively. Pallant's warning of using two highly correlated independent variables in the same regression model was noted. Further examination of the coefficients of the regression equation showed that the standardized Betas were 0.671 for service quality and 0.349 for satisfaction. Both were statistically significant based on the t-test ($p = 0.000$). The results of the stepwise regression suggested that both service quality and satisfaction contributed to the prediction of brand equity even though overlap might have existed in the predictive power of the two independent variables.

Evaluation of Findings

The problem addressed in this study was that marketers and researchers lacked information about possible relationships between service quality and brand equity in online businesses. Although researchers had postulated that higher levels of service quality might lead consumers to value brands more highly (Christodoulides et al., 2006; Kotler & Keller, 2006; Zeithaml et al., 2009), little evidence existed to support this relationship. The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using established and tested models adapted to a particular online service situation.

The conceptual framework for the study was developed after a review of the extant literature on the theories underlying service quality and brand equity and the application of these theories in a variety of offline and online businesses. The Gaps Model of Service Quality and SERVQUAL scale related service quality to satisfaction and brand loyalty (Parasuraman et al., 1988, Parasuraman et al., 1994). The Online Retail/Service (ORS) Model measured online brand equity (Christodoulides et al., 2006).

The study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity in a specific online service business. Survey methodology was chosen to collect numerical and categorical data, and the SERVQUAL scale (Parasuraman et al., 1988) and the ORS scale (Christodoulides et al., 2006) were adapted for use in the service environment. In addition, consumer's attitudes toward price, satisfaction, and intentions were measured.

The specific service environment chosen for this study was online higher education. College administrators and marketers have struggled to articulate the value of their brands so that prospective students might understand differences among competing institutions and make wise enrollment choices (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). The research design for the study was a single-stage, cross-sectional study using a convenience sample of students enrolled in online courses (Creswell, 2003; Zikmund, 2003). The population was students enrolled in online courses at higher education institutions in the United States. The sampling frame, or working population, was students who had taken at least one online course and were accessible through email and Internet web sites. There were 364 qualified respondents to the survey, and random sampling of the qualified respondents led to a quota sample (n = 177) representative of the ages and genders of college and university students in the United States.

Research question one was aimed at examining the relationship between the two key variables of the study, service quality, an independent variable, and brand equity, the dependent variable. The finding was a strong positive correlation existed between service quality and brand equity. The null hypothesis was rejected.

While researchers have not reported on consumers' perceptions of the relationship between service quality and brand equity in online businesses, the finding was consistent with prior studies where service quality was an independent variable. Researchers have demonstrated positive associations between service quality and various dependent variables, including satisfaction, intentions, and loyalty in a variety of retail and online service settings (Boshoff, 2007; Leu, 2009; Pakdil & Harwood, 2005; Saravanan & Rao, 2007; Swaid & Wigand, 2009). Researchers in higher education also identified positive relationships between service quality and student satisfaction and intentions (Arambewela & Hall, 2006; Archambault, 2008; Bayraktaroglu & Atrek, 2010; Ham, 2003; Sahu, 2006; Stodnick & Rogers, 2008; Simmons, 2006). Some researchers have not reported statistically significant relationships between service quality and satisfaction or intentions (Judd, 1998; Yomnak, 2006), and the findings of these studies are reminders of the challenges of assessing service quality in complex and diverse service settings.

Researchers focusing on brand equity have not reported on possible associations between service quality and brand equity but have postulated antecedents to brand equity that are similar to service quality. Broyles et al. (2009) included quality as a functional component of brand equity and noted that reliability was a possible functional antecedent of quality and brand equity. Reliability was one of five dimensions of the SERVQUAL scale that measures service quality (Parasuraman et al., 1988). Rios and Riquelme (2010) noted that customer service was vital to trust and brand equity in online businesses. The finding from this study suggested that there was a strong association between service quality as measured by an adapted SERVQUAL scale and brand equity as measured by an adapted ORS scale.

Research question two was designed to examine the relationship between the other independent variable measured in the study, price or the value the consumer perceived from the institution, and the dependent variable, brand equity. There was a strong positive correlation between price and brand equity. The null hypothesis was rejected.

Brand equity researchers have focused on the definition of the concept and the antecedents and outcomes of brand equity. Page and Lepkowska-White (2002) did not address price or brand value directly but reported that brand image and brand awareness were antecedents of brand equity, and that brand loyalty was an outcome. Broyles et al. (2009) included price as a possible functional antecedent of brand equity and discovered that the relationships among possible functional and experiential antecedents and brand equity were complex and might vary based on the complexity of the brand. Rios and Riquelme (2010) asserted that brand associations, which included the value the consumer ascribed to the brand, were a cause of brand equity, along with brand awareness, recognition, and trust. However, brand value was not statistically correlated with brand equity in the research (Rios & Riquelme, 2010). The finding of this study was that price, or brand value, was positively associated with brand equity.

The mediating effects of brand loyalty and satisfaction, variables identified in the literature as possibly important to the relationship between service quality and brand equity, were studied in research questions three and four. The finding of research question three was that there was a strong positive relationship between service quality and brand equity that was not meditated by the three measures of brand loyalty. The null hypothesis was not rejected. For research question four, the finding was that a strong

positive relationship existed between service quality and brand equity that was mediated by satisfaction. The null hypothesis was rejected.

In the conceptual framework for the study, satisfaction was presumed to have possible mediating effects on the relationship between price and brand equity. Research question five was designed to examine any possible mediating effects. The finding was that there was a weak positive correlation between price and brand equity when controlling for the mediating effects of satisfaction. The null hypothesis was rejected.

In prior studies (Aaker, 1991; Broyles et al., 2009; Clark, 2001; Faircloth et al., 2001; Keller, 1993), brand loyalty and satisfaction were identified as related to or possible antecedents of brand equity. Christodoulides and de Chernatony (2004) identified 10 factors, including brand experience and brand relationships, which were related to online brand equity. In a study of online brand equity by Rios et al. (2010), loyalty was positively correlated and statistically significant as an antecedent of brand equity. Broyles et al. (2009) considered future purchase intent a consequence of brand equity. In this study, purchase intent was conceptualized as one of three variables that define brand loyalty. The finding in this study was that brand loyalty, when conceptualized as three statements of intentions, was not an intervening factor when respondents evaluated the relationship between service quality and brand equity. An additional finding was that satisfaction played a mediating role between service quality and brand equity. Furthermore, satisfaction played a modest mediating role between price and brand equity in this study.

Research question six addressed the possible moderating effects on the relationship between service quality and brand equity due to differences in respondent's

characteristics. Characteristics measured were age, gender, degree program, number of online courses taken, and type of school, whether two- or four-year, public or private. When the relationship between service quality and brand equity was examined for the possible moderating effects of the level of each respondent characteristic, there were no statistically significant moderating effects. The null hypothesis was not rejected. Respondents did not report differences in the strength of the relationship between service quality and brand equity based on differences in age, gender, degree program, number of online courses taken, or whether the schools were two versus four year or public versus private. In the literature review for this study, researchers did not examine or did not report possible moderating effects of respondent characteristics on relationships between antecedents and brand equity.

In spite of the fact that there were no moderating characteristics of respondents that might explain differences in brand equity, the range of brand equity scores was from 1.42 to 7.00 on a seven point scale (n = 177). When the respondents were broken into two groups based on low ORS (1.00 to 3.99) and high ORS (4.00 to 7.00) scores, the number of respondents reporting low brand equity scores was n = 33, or 18.6% of total respondents in the quota sample. The two groups had statistically significant differences in mean scores for all independent and mediating variables at 95% confidence. When subjected to Chi-square tests of differences, no statistical differences existed in the proportions of students based on the moderating characteristics of age, gender, degree program, number of online courses taken, or type of institution.

All independent and mediating variables were analyzed to determine their predictive power for brand equity, the dependent variable, using stepwise multiple

regression. Service quality and satisfaction were statistically significant predictors of brand equity. Service quality explained 77.4% of the variance in brand equity, and the addition of satisfaction increased predictive power to 82.5%. The bivariate correlation of service quality and satisfaction was $r = 0.751$, suggesting overlap in the predictive abilities of the two variables.

Summary

The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity. The model for the study related service quality, price, and the mediating variables brand loyalty and satisfaction to the dependent variable brand equity in a new model that attempted to explain relationships among variables in online businesses. The participants for the study were college students who had taken online college courses.

Chapter 4 began with descriptive statistics of the quota sample ($n = 177$) drawn from the 364 qualified respondents to an online survey. Characteristics of the respondents in the quota sample, including age, gender, degree program, number of online courses taken, and type of institution attended, were summarized in frequency tables. The descriptive statistics also included measures of central tendency and analyses of normality for the independent, mediating, and dependent variables that were measured using approximately interval seven-point numerical scales. The reliability of the scales and the survey instrument were examined using the Cronbach's alpha coefficient and split-half testing. The scales and survey instrument were determined to provide reliable measurements. Confirmatory factor analysis using principal components analysis (PCA) was used to determine the validity of the adapted SERVQUAL and ORS scales. The

analysis did not replicate the five dimensions of either the SERVQUAL or ORS scales, leading to questions about the validity of the measures of service quality and brand equity.

Correlation analysis was used to examine relationships between variables and address the research questions and hypotheses. The distributions of responses for the independent, mediating, and dependent variables were examined for normality using histograms, Normal Q-Q plots, and the Kolmogorov-Smirnoff statistics. The distributions for service quality and brand equity were determined to be approximately normal and the other independent and mediating variables demonstrated skew and were treated as not normally distributed.

The six research questions were tested. Strong positive correlation existed between service quality and brand equity. Strong positive correlation existed between price and brand equity. No mediating effect of brand loyalty existed in the relationship between service quality and brand equity. There was a mediating effect of satisfaction between service quality and brand equity, and there was a mediating effect of satisfaction between price and brand equity. No moderating effects existed between service quality and brand equity based on the respondent's characteristics of age, gender, degree program, number of online courses taken, or type of institution. Regression analysis demonstrated the predictive power of the independent variables service quality and satisfaction on brand equity, the dependent variable.

The evaluation of findings included an interpretation of the results when compared to the conceptual framework. The evaluation included comparisons to the findings of prior research studies in the areas of service quality and brand equity.

Chapter 5 continues the evaluation by presenting implications and recommendations arising from the findings.

Chapter 5: Implications, Recommendations, and Conclusions

Researchers and marketers lacked information about relationships between service quality and brand equity in online service businesses where offerings are intangible and often undifferentiated (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). Consumers might value service quality in online businesses and associate higher levels of service quality with brand equity (Christodoulides et al., 2006; Kotler & Keller, 2006; Zeithaml et al., 2009). Managers might invest to improve online service quality if a relationship between service quality and online brand equity were established. In addition, marketers in online service businesses will use the knowledge of the relationships between service quality and brand equity to position and communicate the value of their brands more effectively. Consumers will benefit from more informed choices among online businesses and by having improved support services that provide more value when they interact with online service businesses.

The purpose of the quantitative study was to examine possible relationships between the quality of Internet- and human-delivered support services and online brand equity using the Gaps Model of Service Quality (Parasuraman et al., 1994) and the Online Retail/Service (ORS) Model of brand equity (Christodoulides et al., 2006). The Gaps Model of Service Quality relates service quality to satisfaction and brand loyalty (Parasuraman et al., 1994). The Online Retail/Service (ORS) Model measures online brand equity (Christodoulides et al., 2006).

The study was an examination of a new model to explain attitudes of consumers toward online support services quality and brand equity in online service businesses. The quantitative study used survey methodology to measure attitudes about service quality,

price, brand equity, satisfaction, and brand loyalty among consumers. The service setting for the study was online higher education, and the participants for the study were college students who had taken online college courses. Sampling methodology was a convenience sample of college students who could be reached by email and social media web sites. Respondents entered an online survey at SurveyMonkey.com and completed a questionnaire with 45 questions. There were 436 respondents to the survey, and 72 responses were disqualified because students had not taken an online course, had not completed all questions, or demonstrated indifference when answering questions. The data from 364 qualified respondents was entered into SPSS (Version 18.0) statistical software. A quota sample (n = 177) respondents was randomly selected to represent the portions of ages and genders found in the population of college and university students in the United States. Descriptive statistics and bivariate statistics were used to summarize the data and address the research questions and hypotheses.

The extent to which these findings can be generalized to the population of college and university students in the United States was a limitation of the study. External validity is the ability to measure from a sample and draw correct inferences about the population at large (Zikmund, 2003). A simple random sample of the population of more than 18.2 million students was not possible (Digest of Education Statistics, 2009). The sampling methodology chosen was a convenience sample, which may have led to bias in student characteristics, such as age and gender, or student experiences with service quality and brand equity at their respective institutions. Quota sampling was an attempt to minimize bias due to student age and gender and match those characteristics to known population parameters. Still, it was not possible to ensure that student experiences were a

true sample of experiences of all students throughout the United States, and external validity of the findings remained questionable.

Furthermore, the choice of the service setting in online higher education might have jeopardized the generalizability of the findings to other online service businesses. Online higher education is a business where the service is high cost and students spend years to attain the service benefits. Results of this study may not have been directly comparable to other service settings where the online service is a singular event or occurs as part of product procurement. Parasuraman et al. (2004) noted that further research was needed to validate the use of SERVQUAL and e-SERVQUAL in a variety of service settings. The ORS scale (Christodoulides et al., 2006) was developed and tested in online service settings where service was part of product procurement. The service setting and survey methodology chosen for this study may not have led to results that will be replicable in other online service businesses.

A possible limitation of the study was the reliability of the rating scales and survey instrument to measure service quality, brand equity, and other constructs. The SERVQUAL and ORS scales were adapted from prior research for use in this study. The SERVQUAL scale was a 22-item, seven-point numerical scale that measured service quality (Parasuraman et al., 1988). The Cronbach's Alpha coefficient was a measure of internal consistency of the rating scale (Pallant, 2010). In this study, the Cronbach's Alpha coefficient was 0.937. According to Parasuraman et al. (1988), the Cronbach's Alpha coefficient for the 22-item SERVQUAL scale ranged from 0.87 to 0.90 for four different samples. According to Pallant (2010), values of the Cronbach's Alpha of 0.70 or higher were acceptable and values of 0.80 or higher were preferred. When developing

the ORS scale, a 12-item, seven-point numerical scale to measure online brand equity, Christodoulides et al. (2006) constructed and tested the scale using structural equation modeling (SEM) and the LISREL software. The statistics reported by the researchers indicated high levels of reliability and validity for the ORS scale (Christodoulides et al., 2006), but the statistics were not directly comparable to the statistics reported in this research study.

Another possible limitation of the study was the reliability of the survey instruments to measure consistent results from respondent to respondent. The reliability of the survey instrument to measure consistent results free from error was tested using the split-half method (Zikmund, 2003). All respondents were assigned random numbers and then split into two groups. The mean scores for the dependent variable, brand equity, and all independent and mediating variables for the two groups were compared and tested using the two-sample test of means. The results at 95% confidence were that the mean scores of the randomly selected split-halves of survey respondents were statistically the same. The survey instrument was judged to measure consistent results across all respondents.

Another possible limitation of the study was the adaptations required to use the SERVQUAL and ORS scales to measure service quality and brand equity in online higher education. The adaptations were a threat to construct validity, which was the operationalization or translation of an idea or concept into a concrete reality, phenomena, or related hypotheses (Trochim & Donnelly, 2007; Zikmund, 2003). To ameliorate possible threats to construct validity, the operationalized items of the SERVQUAL and ORS scales used common English that was free of jargon used in specific higher

education institutions. The operationalized scales were reviewed by higher education professionals and were then pretested with students. Changes were made in some statements to minimize confusion and improve communications of the scale items.

Non-response bias was a possible limitation of the study. Non-response bias can occur when respondents and non-respondents to surveys have different responses to the research topics (Trochim & Donnelly, 2007; Zikmund, 2003). To encourage response, a tailored design method incorporating a series of email communications to the working population was used (Dillman et al., 2007). A precise measure of differences between respondents and non-respondents cannot be known, but possible direction and magnitude of non-response bias can be estimated by assuming that those who responded later were more like non-respondents than those who responded earlier (Sax, Gilmartin, & Bryant, 2003). For this study, respondents were grouped into three samples based on the timing of the response in relation to the timing of the emails and posts inviting them to participate in the study. The mean scores for the dependent variable, brand equity, were compared among the groups using analysis of variance (Norusis, 2006). Further study of possible non-response bias involved comparing the groups on the respondents' characteristics of age, gender, academic program, and experience with online education using Chi-square analysis (Norusis, 2006). Results were that no statistical differences existed among the three groups. Interpretation of the results was complicated by the fact that respondents could invite others to participate in the survey, and there was no way to assess which respondents were part of the original group or responded because they were recruited by other respondents.

Delimitations of a study might also be sources of limitations in the ability to

interpret the results. For this study, the inability to measure marketing activities and situational factors was a limitation. Researchers recognized marketing activities and situational factors as two possible independent variables that might influence consumer's attitudes about service quality and satisfaction (Aaker, 1991; Coulthard, 2004; Gronroos, 1984; Zeithaml & Parasuraman, 2004). Marketing activities were temporal and change based on seasonality, business changes, and planned promotional events. Situational factors were individual circumstances of consumers, such as health, work, or family influences, which might affect perceptions of satisfaction or brand equity. For the study, marketing activities and situational factors were recognized as independent variables that might have had a relationship to consumer's perceptions of brand equity. Measurements of the two independent variables and possible relationships to brand equity were beyond the scope of the study and were also a limitation in interpreting the results of the study.

The study was conducted to comply with established standards for research with human subjects. Respondents were notified of the purpose and nature of the research and were advised that their participation was voluntary. Respondents could withdraw from the study at any time. Respondents were further notified that their data was confidential and would not be disclosed. Informed consent was embedded in the instructions to the online survey (see Appendix A). Approval was obtained from the Northcentral University IRB prior to conducting the study. The study posed a low risk to participants who entered a web-site of a third party Internet research company and completed the survey using a series of web forms. Respondents did not disclose their names, addresses, contact information, or other key identification.

Chapter 5 contains implications of the research study. Each research question and

associated hypotheses are discussed and assessed in light of the framework of the study, findings of the research, and supporting literature. Recommendations for practical applications for further model development and possible improvements in brand equity are included. The chapter concludes with a summary of the key points.

Implications

The problem addressed in the study was the lack of information in the research literature about the relationship between service quality and brand equity. The service setting for the study was online higher education where administrators and marketers have struggled to differentiate their brands and students have had difficulty making wise enrollment choices based on solid information (Bastedo, 2006; Carnevale, 2006; DePerro, 2006; Edmiston-Strasser, 2007). The framework for the study was a new model that identified service quality and price as independent variables that affected a consumer's perceptions of brand equity. Mediating variables were satisfaction and brand loyalty, which were assumed to affect the relationships between the independent and dependent variables. The possible effects of student characteristics as moderating variables were also assessed.

The first research question and hypotheses addressed in the study were:

RQ_1. To what extent, if any, did a consumer's perception of service quality, as measured by the Gaps Model, relate to a perception of brand equity, as measured by the ORS Model?

$H1_o$. There is no relationship between a consumer's perception of service quality and perception of brand equity.

$H1_a$. There is a significant relationship between a consumer's perception of service

quality and perception of brand equity.

A significant positive relationship was found between service quality and brand equity in online higher education. The null hypothesis was rejected. The implication of this finding was that students were able to assess their institutions' levels of Internet- and human-delivered service quality and to associate that service quality to an assessment of the overall value of the institution's brand. Students generally reported brand equity scores that were consistent with their service quality scores. If service quality was low, brand equity was likely to be low. If service quality was high, brand equity was likely to be high. The construct validity and reliability of the scales used to measure service quality and brand equity was a limitation that might have affected the results and interpretation of the findings of this study.

The results of this study were consistent with other studies where service quality was an antecedent and positively correlated with attitudes and outcomes, including satisfaction, intentions, and loyalty in a variety of retail and online service settings (Boshoff, 2007; Leu, 2009; Pakdil & Harwood, 2005; Saravanan & Rao, 2007; Swaid & Wigand, 2009). Researchers in higher education also identified positive relationships between service quality and student satisfaction and intentions (Arambewela & Hall, 2006; Archambault, 2008; Bayraktaroglu & Atrek, 2010; Ham, 2003; Sahu, 2006; Stodnick & Rogers, 2008; Simmons, 2006). Managers in online service businesses can control service quality through actions aimed at automation of online service and training and support of service delivery personnel. The implication of this research, along with the findings in the literature review, was that managers can influence customer's perceptions of satisfaction, loyalty, and brand equity when they make positive changes to

service quality. This study contributed to the research literature because the study demonstrated a correlation between two important marketing concepts, service quality and brand equity. The sampling method of this study was a limitation that prevented the generalizability of the findings to the population of college and university students in the United States. The choice of online higher education was a limitation that affected the generalizability of the findings to other service businesses.

The second research question and hypotheses addressed in the study were:

RQ_2. To what extent, if any, did price relate to a consumer's perception of brand equity, as measured by the ORS model?

$H2_o$. There is no relationship between price and a consumer's perception of brand equity.

$H2_a$. There is a significant relationship between price and a consumer's perception of brand equity.

For the study, there was a strong positive correlation between price and brand equity. The null hypothesis was rejected. Price was measured using the statement *I am satisfied that the School offers a good value for the money I pay for tuition and fees.* Consequently, students were asked for a summative judgment of value associated with the price they paid for tuition and fees. The strong positive relationship between price and brand equity suggested that students were able to associate their judgment of price with their beliefs about brand equity. Higher price scores were associated with higher brand equity scores, and the opposite was also true. The implication was that a summative judgment of price, or value, was an antecedent of brand equity.

The construct validity of the scales measuring price and brand equity was a

limitation of this study. Value is an elusive concept. Brand value has been associated with financial measures and positively correlated with brand equity (Eng & Keh, 2007). Brand value has also been associated with the company's value proposition and identified with quality in online businesses (Rios & Riquelme, 2010). Price itself may not have been associated with brand equity (Rios & Riquelme, 2010). In higher education, many administrators understood the value of customer relationship management (CRM) and used CRM with prospective and current students to convey brand value and increase enrollment and retention rates (Tsai, 2007). The implication of the literature and this study was that managers should seek to define and understand not just the absolute price but the value consumers perceive to be delivered by their offering. Focusing on improving the value offered and communicating the value of the brand will influence consumers' perceptions of brand equity. This study contributed to the research literature because it added to a body of studies demonstrating that perception of brand value, or price, was an antecedent of brand equity.

The third, fourth, and fifth research questions and associated hypotheses were related to the possible mediating effects of satisfaction and brand loyalty. The implications of the findings were considered together.

RQ_3. To what extent, if any, did a consumer's brand loyalty mediate, or influence, the possible relationship between service quality and brand equity?

$H3_o$. There are no mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

$H3_a$. There are significant mediating effects of a consumer's brand loyalty of the possible relationship between service quality and brand equity.

RQ_4. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between service quality and brand equity?

$H4_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

$H4_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between service quality and brand equity.

RQ_5. To what extent, if any, did a consumer's satisfaction mediate, or influence, the possible relationship between price and brand equity?

$H5_o$. There are no mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

$H5_a$. There are significant mediating effects of a consumer's satisfaction of the possible relationship between price and brand equity.

The finding of research question three was that there was a strong positive relationship between service quality and brand equity that was not meditated by the three measures of brand loyalty. The null hypothesis was not rejected. For research question four, the finding was that a strong positive relationship existed between service quality and brand equity that was mediated by satisfaction. The null hypothesis was rejected. Research question five was designed to examine any possible mediating effects of satisfaction between price and brand equity. The finding was that there was a weak positive correlation between price and brand equity when controlling for the mediating effects of satisfaction. The null hypothesis was rejected. Validity and reliability of the measurement scales were a limitation that may have affected the results and interpretation of the findings.

The conceptual framework for the study was developed from findings in the research literature on service quality and brand equity. No prior studies were discovered that related the two concepts directly. Studies in service quality offered conflicting results and suggested that a consumer's evaluation of service quality led to satisfaction (Parasuraman et al., 1985), or that satisfaction preceded service quality (Cronin & Taylor, 1992). Sibley (2007) suggested that satisfaction could be transaction-specific and associated with transaction-specific measures of service quality, and the two transaction-specific variables could then be associated with a summative satisfaction measure. Service quality was also studied as a possible antecedent to repurchase intent and willingness to recommend to others (Baumann et al. 2007), customer loyalty (Saravanan & Rao, 2007), and satisfaction and repurchase intent in online product purchases (Collier & Bienstock, 2009). While some studies demonstrated strong positive relationships between service quality and other variables, some results did not suggest that service quality was an antecedent variable (Yomnak, 2006). In addition to studies of service quality, researchers who focused on brand equity reported that brand loyalty and satisfaction were related to or possible antecedents of brand equity (Aaker, 1991; Broyles et al., 2009; Clark, 2001; Faircloth et al., 2001; Keller, 1993),.

When considering the finding of no mediating effects of brand loyalty on the relationship between service quality and brand equity, an implication is that the strong positive relationship was not overcome by measures of intention. Students associated service quality and brand equity independent of their loyalty and intentions to complete their degrees, recommend to others, and reenroll in future programs. The implication for managers was that consumers will assign brand equity based on their experiences with

service quality and independent of their loyalty to the business. Measures of future intentions alone may not be sufficient if managers are attempting to measure the overall value of their brand and consumer's willingness to support the brand in the future.

When considering the finding of some mediating effects of satisfaction on the relationship between service quality and brand equity, an implication was that an overall summative assessment of satisfaction may strengthen the relationship between service quality and brand equity. Students had stronger associations of service quality and brand equity if their overall satisfaction was higher. The implications for managers were that consumers will be inclined to assess brand equity based on their experiences with service quality and their overall satisfaction with the online business. Satisfaction may be influenced by product quality or prices, in addition to service quality. However, measures of satisfaction alone may not be sufficient and should include measures of service quality, if managers are seeking to measure the overall value of their brand and consumers' willingness to support the brand in the future.

When considering the finding of a weak mediating effect of satisfaction on the relationship between price and brand equity, the implication was that students were affected by their summative judgment of satisfaction when developing their attitudes toward brand value and the relationship to brand equity. Students may have associated overall satisfaction with the value they received for the money spent for tuition and fees. The implication for managers was that consumers might examine the value proposition of the offering when assessing satisfaction and might use both the assessment of value and overall satisfaction when drawing conclusions about brand equity. This study adds to the research literature of possible antecedents of brand equity and mediating effects of other

attitudinal variables.

The sixth research question and hypotheses addressed in the study were:

RQ_6. To what extent, if any, did a consumer's characteristics, including age and gender, moderate the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction?

$H6_o$. There are no moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

$H6_a$. There are significant moderating effects of a consumer's characteristics, including age and gender, of the possible relationship between service quality and brand equity, or the possible mediating effects of brand loyalty or satisfaction.

The finding of research question six was that there were no moderating effects of age, gender, degree program, number of online courses taken, or type of school on the relationship between service quality and brand equity. The null hypothesis was accepted. Students of all ages, both genders, and a variety of academic experiences perceived relationships between service quality and brand equity that were independent of their characteristics and experiences. The sampling method of this study was a limitation that prevented the generalizability of the findings to the population of college and university students in the United States. The choice of online higher education for the service setting prevented the generalizability of the findings to other online service businesses.

In the literature review for this study, researchers reported moderating effects of consumer characteristics in studies using the SERVQUAL scale. Christy (1997) reported significant differences in SERVQUAL dimension scores among men and women,

resident and non-resident students, and students attending different schools at a traditional college in the United States when students were asked to compare their institution to a hypothetical, ideal university. Kerlin (2000) found significant differences in SERVQUAL scores in men and women and different ethnic groups who evaluated support services, including financial aid and library services but not classroom instruction, at a campus-based community college. Harris (2002) also found differences in SERVQUAL scores for expectations and perceptions based on gender and ethnicity in a study at a state university.

Reporting on research to examine faculty and support staff at a university, Schwantz (2006) noted that younger, traditional students found empathy to be a more important attribute among the five SERVQUAL dimensions while older, non-traditional students found reliability to be more important. Arambewela and Hall (2006) cautioned that cultural differences might lead to different assessments of service quality when they observed statistically significant differences in SERVQUAL scores in students from China, India, Indonesia, and Thailand. Archambault (2008) reported mixed results when using SERVQUAL and SERVPERF to assess service quality, satisfaction, and intentions for traditional age students. Gender was a source of difference in service quality expectations with women having higher expectations than men, but student ages having no significant effect (Archambault, 2008).

There were no significant differences found in this study in the relationship between service quality and brand equity based on moderating characteristics of students, but the findings from other studies suggested that moderating effects were possible. The implication for managers was that consumers might have differing views of service

quality and associated assessments of online brand equity based on their gender, age, and experiences. Marketers should not overlook possible effects of consumer characteristics when studying the relationship between service quality and online brand equity. The choice of online higher education was a limitation that affected the generalizability of the finding to other service businesses.

Although not a formal research question in the study, the wide range of brand equity scores was investigated to determine if significant differences existed in independent, mediating variables, or student characteristics between lower and higher brand equity scores. The group of respondents reporting lower brand equity scores (n = 33) had a mean score of 3.03, and the group reporting higher brand equity scores (n = 144) had a mean score of 5.33. The mean ORS scores of the two groups were significantly different at 95% confidence. In addition, the two groups had statistically significant differences in mean scores for all independent and mediating variables at 95% confidence. When subjected to Chi-square tests of differences, no statistical differences existed in the proportions of students based on the moderating characteristics of age, gender, degree program, number of online courses taken, or type of institution.

The implications of the findings were that two distinctly different groups of students existed. The first group (n = 33) represented 18.6% of the quota sample, or approximately 1 of every 5 to 6 students. This group reported lower mean scores for service quality (3.16), price (2.52), satisfaction (2.82), intention to complete the academic program (4.06), intention to recommend the school to others (3.18), intention to reenroll in other programs (3.09), and brand equity (3.03). The only measure higher than 4.0, the scale midpoint, was intention to complete the academic program. Students may have felt

a need to endure even when having negative experiences or feeling discordant emotions because of the investment in their academic programs. By contrast, the second group of students (n = 144) represented 81.4% of the quota sample and reported higher means scores for service quality (5.55), price (5.30), satisfaction (5.65), intention to complete the academic program (5.98), intention to recommend the school to others (5.38), intention to reenroll in other programs (4.76), and brand equity (5.33). The validity and reliability of the scales and survey instrument were limitations that might have affected the results and ability to interpret the findings of this study. Researchers investigating the relationship between service quality and brand equity might choose to develop and test scales that will be valid and reliable indicators of the two constructs in the specific service environment. Future researchers might also consider using exploratory research methods, such as depth interviews, to follow-up with respondents who report divergent experiences with service quality and brand equity. Depth interviews might lead to identification of new and unexplored variables that affect respondents' attitudes toward service quality, brand equity, and other constructs in a specific service setting.

Regression analysis demonstrated that service quality and satisfaction were statistically significant predictors of brand equity. While price and the three indicators of brand loyalty were statistically significant and positively correlated with brand equity, the four variables were poor predictors of brand equity and were not statistically significant. Service quality explained 77.4% of the variance in brand equity, and the addition of satisfaction increased predictive power to 82.5%. The implication of this finding was that an evaluation of the service quality delivered by the institution was a strong indicator of how respondents evaluated the overall brand value. The finding was a contribution to

the research literature because researchers have not studied or have not reported on possible relationships between service quality and brand equity in online higher education or other service settings.

The choice of the service setting in online higher education was a limitation that affected the interpretation of the findings and the generalizability to other service businesses. Students have numerous encounters with online- and human-delivered services during their academic careers. Each encounter is an opportunity to affect their attitudes about service quality and brand equity. In addition, online higher education is a business where the service is high cost, and students spend years to attain the service benefits. Results of this study may not have been comparable to other service settings where the online service was a singular event or occurred as part of product procurement.

In addition to the limitations of the study, the choices in constructs and variables that were measured in the study may have affected the interpretation of the model. The review of the literature suggested that two types of variables might have played roles in directly influencing perceptions of brand equity. The first type was attitudinal variables related to perceptions of the brand and amenable to manipulation by marketers. Examples were brand knowledge (Keller, 1993), brand meaning (Berry, 2000), and brand image (Faircloth et al. 2001). This type of perceptual variable might have been influenced by promotional pricing and marketing communications. Researchers investigating service quality and brand equity in the future might choose to add constructs to study the effects of marketing activities on perceptions of brand equity.

The second type was situational factors related to the specific structure of the service industry and nature of the service delivery or to the personal situations of

consumers. Researchers identified service situations, including online service delivery, where situational differences led to confounded dimensionality of the SERVQUAL scale (Barrutia et al., 2009; Coulthard, 2004; Zeithaml & Parasuraman, 2004). In addition, the emotions of consumers might have played a role in forming attitudes about service quality (Zeithaml, Bitner, & Gremler, 2009).

The model for the study envisioned the possibility of two independent variables, marketing activities and situational factors, which were not measured in this study. This delimitation of the study was a limitation in the interpretation of the findings. It was possible that either variable, or both, could be correlated with students' perceptions of brand equity. It was also possible that either or both variables could have mediated the relationship between service quality and brand equity. Studies of the possibilities were left for future research.

The findings of this study were assessed to modify the model of possible relationships between service quality and brand equity in online businesses. Possible mediating effects of brand loyalty on the relationship between service quality and brand equity were not confirmed in the study and were removed from the model. See Figure 6.

Recommendations

Managers of online businesses face substantial challenges in differentiating their service offerings. Managers may find the findings of this study useful. The primary recommendation arose from research question one. Managers should consider the effects of the quality of their services on consumers' perceptions of the value of their online brands. Consumers will make judgments about the long term value of the online brand based on their experiences with Internet- or human-delivered services. If service quality

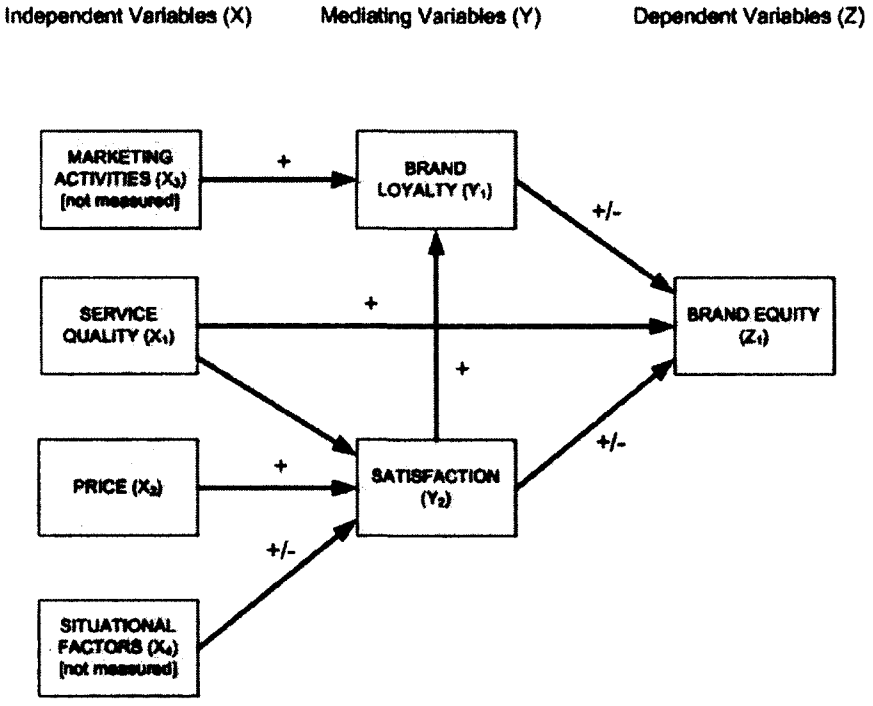


Figure 6. A Revised Model of Possible Relationships between Service Quality and Brand Equity in Online Businesses.

The model is an illustration of possible relationships among independent, mediating, and dependent variables based on the findings of this study of the relationship between service quality and online brand equity.

---

is judged to be poor, consumers may reduce their assessments of brand equity. Managers might experience fewer transactions for the online business and lower revenue and profit. Based on the findings of research question four, satisfaction played a mediating role between service quality and brand equity. Managers of online businesses might focus on all sources of consumer satisfaction, including product quality and price, to affect the strength of the perception of the relationship between service quality and online brand equity.

In addition, a recommendation that arose from research question two was that managers carefully consider the value proposition of their brand and the impact on

consumers' evaluations of brand equity. Consumers have an expectation of the amount they are willing to pay and the associated value of the brand. Based on the findings of this study, the brand value correlates with judgments of brand equity. In addition, the finding for research question five was that satisfaction played a weak mediating role between price and brand equity. Managers might experience more transactions and higher levels of revenue and profit if consumers believe the value proposition of the online business and are satisfied with the online experience.

Based on the findings of research question three, managers should consider that consumers are capable of judging directly the relationship between service quality and brand equity and may not be swayed by brand loyalty. Efforts to build customer loyalty, such as sales promotion, may not be effective if quality of Internet- and human-delivered services is poor. Many managers use simple indicators of satisfaction and brand loyalty, such as post purchase satisfaction surveys, in their service businesses. These summative indicators may not probe deeply enough into the dimensions of service quality and how consumers assess the dimensions, service quality overall, or the relationship to brand equity. Managers might adopt survey techniques that measure the dimensions of service quality, satisfaction, and dimensions of brand equity. Managers with actionable information might improve Internet- and human-delivered service quality, leading to higher levels of revenue and profits for their online businesses.

Finally, based on the findings of research question six and the literature review, managers should carefully assess the service needs of different customer segments based on customer characteristics or other differentiating factors. While student characteristics did not moderate the relationship between service quality and brand equity in the service

setting of online higher education, other research studies indicated that age, gender, and ethnicity were moderating influences that affected assessments of service quality (Archambault, 2008; Christy, 1997; Kerlin, 2000; Schwantz, 2006). Managers should thoroughly understand the characteristics of their customers as well as their needs and requirements for service support to increase revenues and profits.

Based on the findings of this study, future opportunities for research existed. The revised model (see Figure 6) should be tested. Measures of student personal situational factors might be included to test whether situational factors will be directly correlated with students' assessments of brand equity or play a mediating role in the relationship between service quality and brand equity.

The sample for the study represented a cross-section of students from a variety of two- and four-year, public and private institutions. Future research might concentrate on a small number of specific institutions or on students enrolled in different academic disciplines within the same institution. The benefits would include the ability to compare results among the institutions or across academic disciplines within the same institution. In addition, the survey instrument might be modified to delve more deeply into specific aspects of Internet- and human-delivered service support.

While the study established a relationship between service quality and brand equity, the dimensionality of the scales, found in prior research, was not confirmed. Additional research that focuses on refining and validating the SERVQUAL and ORS scales might uncover new online service quality and brand equity dimensions. In addition, future studies should assess the relationship between service quality and brand equity in other service settings. Online higher education was the choice for this study,

but the industry is only one of many possible service industries.

In addition to service quality and brand equity, the constructs for this study included price, or brand value, and brand loyalty. Further construct development of price, an independent variable in this study, might lead to better understanding of the relationship between the money paid for the service experience and the consumer's assessment of brand equity. In addition, brand loyalty was assessed through three statements of student intentions to complete the academic program, recommend the institution to others, and reenroll for future programs. The conceptualization of brand loyalty was not generalizable to other online service environments. Further research might be warranted to develop a common and generalizable construct for brand loyalty.

Conclusions

The problem addressed in this study was that researchers and marketers lacked information about relationships between service quality and brand equity in online service businesses (Carnevale, 2006; Christodoulides et al., 2006; Zeithaml et al., 2009). The services sector of the economy in the United States is large, and Internet transactions for service businesses are growing rapidly. Consumers might value service quality in online businesses and associate higher levels of service quality with brand equity (Christodoulides et al., 2006; Kotler & Keller, 2006; Zeithaml et al., 2009). An established relationship between service quality and online brand equity might lead managers to invest to improve the quality of services offered to consumers. Furthermore, managers might position their online businesses based on the quality of services offered and differentiate the businesses from competitors.

The quantitative study was an examination using survey methodology of a new

model to explain attitudes of consumers toward online support services quality and brand equity in online service businesses. The service setting for the study was online higher education, and the participants for the study were college students who had taken online college courses. The results of the study were that students reported a strong positive correlation between service quality and brand equity that was not mediated by brand loyalty but was mediated by satisfaction. Price and brand equity were positively correlated with a small mediating effect from satisfaction. Student characteristics of age, gender, academic degree, experience with online education, and type of educational institution did not moderate the relationship between service quality and brand equity.

The implications of the study were limited due to the choices made in the research design and sampling methodology. The choice of online higher education meant that generalization of results to other service situations was difficult. The choice of a convenience sample meant that generalization of the results to all college and university students in the United States was difficult. In addition, the choices made in adapting the SERVQUAL scale (Parasuraman et al., 1998) and the ORS scale (Christodoulides et al., 2006) affected the validity and reliable of the scales in measuring service quality and brand equity.

The recommendations arising from the study were that managers should consider the effects of the quality of their Internet- and human-delivered services on consumers' perceptions of the value of their online brands. Managers should seek to ensure that consumers are satisfied with pricing and product quality because these perceptions might influence consumers' assessments of service quality and online brand equity. Managers should also strive to understand the value proposition of their brands and the impact on

consumers' evaluations of brand equity. In addition, managers should consider that consumers are capable of judging directly the relationship between service quality and brand equity and may not be swayed by marketing activities designed to improve brand loyalty. Furthermore, managers should carefully assess the service needs of different customer segments based on customer characteristics or other differentiating factors. Recommendations for further research included replication of this study to test the new, revised model and to change the sampling methodology to focus on a few online institutions. Further recommendations were to focus further on scale development to understand the dimensionality of service quality and brand equity in online service businesses.

Chapter 5 began with a brief overview of the research problem and purpose and the limitations of the research. The chapter contained implications of the research study. Each research question and associated hypotheses were discussed and assessed in light of the framework of the study, findings of the research, and supporting literature. Recommendations for practical applications by managers of online businesses were discussed, and recommendations for further testing of the model and scale development were included.

References

Aaker, D. (1991). *Managing brand equity*. New York: The Free Press.

Aaker, D. (1996). Measuring brand equity across products and markets. *California Management Review, 38*(3), 102. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=9659946&sid=4&Fmt=4&clientId=52110&RQT=309&VName=PQD

Alzola, L., & Robaina, V. (2005). SERVQUAL: Its applicability in electronic commerce B2C. *The Quality Management Journal, 12*(4), 46-57. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=915160381&sid=6&Fmt=4&clientId=52110&RQT=309&VName=PQD

Ambler, T. (1997). How much of brand equity is explained by trust? *Management Decision, 35*(4), 283-292. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=117543032&sid=7&Fmt=3&clientId=52110&RQT=309&VName=PQD

Ambler, T. (2000). *Marketing and the bottom line: The new metrics of corporate wealth*. London: Prentice Hall/Financial Times.

Ambler, T., Kokkinaki, F., & Puntoni, S. (2004). Assessing marketing performance: Reasons for metrics selection. *Journal of Marketing Management, 20*(3/4), 475-498. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=657694151&sid=7&Fmt=2&clientId=52110&RQT=309&VName=PQD

American Marketing Association. (2010). Retrieved June 7, 2009 from http://www.marketingpower.com/_layouts/Dictionary.aspx?dLetter=B

Anderson, R. E. (1973). Consumer dissatisfaction: The effect of disconfirmed expectancy on perceived product performance. *Journal of Marketing Research, 10*(1), 217-235. doi:10.2307/3149407.

Arambewela, R., & Hall, J. (2006). A comparative analysis of international education satisfaction using SERVQUAL. *Journal of Services Research, 6*, 141-163. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1245927971&sid=8&Fmt=3&clientId=52110&RQT=309&VName=PQD

Archambault, L. (2008). Measuring student satisfaction and its impact on student retention: Developing a combined model for use in private, post-secondary institutions. D.B.A. dissertation, Nova Southeastern University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1647457321&sid=9&Fmt=2&clientId=52110&RQT=309&VName=PQD

Arora, R., & Stoner, C. (1996). The effect of perceived service quality and name familiarity on the service selection decision. *The Journal of Services Marketing*. *10*(1), 22-34. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=117541839&sid=10&Fmt=3&clientId=52110&RQT=309&VName=PQD

Babakus, E., & Boller, G. (1992). An empirical assessment of the SERVQUAL scale. *Journal of Business Research*, *24*(3), 253-268. Retrieved from http://web.ebscohost.com.proxy1.ncu.edu/ehost/resultsadvanced?vid=5&hid=113&sid=f20e9c46-2e3f-4c83-9a50-edaf7f823e35%40sessionmgr110&bquery=(boller)+and+(servqual)&bdata=JmRiPWJ1aCZkYj1laGgmZGI9cGRoJmRiPXB6aCZkYj1wc3loJmRiPWJ3aCZ0eXBlPTEmc2l0ZT1laG9zdC1saXZl

Badri, M. A., Abdulla, M., & Al-Madani, A. (2005). Information technology center service quality: Assessment and application of SERVQUAL. *The International Journal of Quality & Reliability Management*, *22*(8/9), 819-848. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=938665171&sid=11&Fmt=4&clientId=52110&RQT=309&VName=PQD

Barrutia, J., Charterina, J., & Gilsanz, A. (2009). E-service quality: an internal, multichannel and pure service perspective. *The Service Industries Journal*, *29*(12), 1707. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1900724431&sid=13&Fmt=2&clientId=52110&RQT=309&VName=PQD

Bastedo, M. (2006). The Uses of Institutional Culture: Strengthening Identification and Building Brand Equity in Higher Education, *Review of Higher Education*, *29*(2), 240-241. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=957244081&sid=14&Fmt=3&clientId=52110&RQT=309&VName=PQD

Baum, S., & Ma, J. (2009). *Trends in college pricing*. Washington, DC: The College Board.

Baumann, C., Burton, S., Elliott, G., & Kehr. H. (2007). Prediction of attitude and behavioural intentions in retail banking. *The International Journal of Bank Marketing*, *25*(2), 102-116. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1283141551&sid=6&Fmt=3&clientId=52110&RQT=309&VName=PQD

Bayraktaroglu, G., & Atrek, B. (2010). Testing the Superiority and Dimensionality of SERVQUAL vs. SERVPERF in Higher Education. *The Quality Management Journal*, *17*(1), 47-59. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1283141551&sid=16&Fmt=3&clientId=52110&RQT=309&VName=PQD

Belch, G., & Belch, M. (2009). *Advertising and promotion: An integrated marketing*

communications perspective (8th ed.). New York: McGraw-Hill/ Irwin.

Berry, L. L. (2000, Winter). Cultivating service brand equity. *Journal of the Academy of Marketing Science, 28*(1), 128-137. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=47509705&sid=17&Fmt=4&clientId=52110&RQT=309&VName=PQD

Boshoff, C. (2007). A psychometric assessment of E-S-QUAL: A scale to measure electronic service quality. *Journal of Electronic Commerce Research, 8*(1), 101-114. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1230897481&sid=18&Fmt=3&clientId=52110&RQT=309&VName=PQD

Broyles, S., Schumann, D., & Leingpibul, T. (2009). Examining brand equity antecedent/consequence relationships. *Journal of Marketing Theory and Practice, 17*(2), 145-161. Doi10.2753/MTP1069-6679170204

Cardozo, R. N. (1965). An experimental study of customer effort, expectation, and satisfaction. *Journal of Marketing Research, 2*(3), 244. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=66046008&sid=19&Fmt=6&clientId=52110&RQT=309&VName=PQD

Carman, J. M. (1990). Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. *Journal of Retailing, 66*(1), 33-55. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=590705&sid=20&Fmt=6&clientId=52110&RQT=309&VName=PQD

Carnevale, D. (2005). Online courses continue to grow, Report Says. *The Chronicle of Higher Education, 51*(44), A29. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=879942871&sid=21&Fmt=3&clientId=52110&RQT=309&VName=PQD

Carnevale, D. (2006). Company's survey suggests strong growth potential for online education. *The Chronicle of Higher Education, 53*(13), A35. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1191531491&sid=22&Fmt=3&clientId=52110&RQT=309&VName=PQD

Carnevale, D. (2007). Nonprofit Institutions Could Make Gains in Online Education, Report Says. *The Chronicle of Higher Education, 53*(31), A30-A32. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1268346981&sid=23&Fmt=3&clientId=52110&RQT=309&VName=PQD

Carter, R. (2009). The impact of perceived service quality on MBA student satisfaction and recommendations: Do expectations matter? *Services Marketing Quarterly, 30*(3), 234. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1750741201&sid=25&Fmt=2&clientId=52110&RQT=309&VName=PQD

Chatterjee, A., Ghosh, C., & Bandyopadhyay, S. (2009). Assessing students' rating in higher education: A SERVQUAL approach. *Total Quality Management & Business Excellence*, *20*(10), 1095. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1898411301&sid=27&Fmt=2&clientId=52110&RQT=309&VName=PQD

Chen, C. (2003). An investigation of significant factors affecting consumer trust in e-commerce. Ph.D. dissertation, University of Nevada, Las Vegas, United States -- Nevada. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=764949991&sid=28&Fmt=2&clientId=52110&RQT=309&VName=PQD

Christodoulides, G. & de Chernatony, L. (2004). Dimensionalising on- and offline brands' composite equity. *The Journal of Product and Brand Management*, *13*(2/3), 168-179. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=667006461&sid=29&Fmt=4&clientId=52110&RQT=309&VName=PQD

Christodoulides, G., de Chernatony, L., Furrer, O., Shiu, E., & Abimbola, T. (2006). Conceptualising and Measuring the Equity of Online Brands. *Journal of Marketing Management*, *22*(7), 799. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1159744221&sid=30&Fmt=2&clientId=52110&RQT=309&VName=PQD

Christy, J. A. (1997). A comparison of students' perceptions of selected measures of institutional service quality with excellence. Ph.D. dissertation, The University of Iowa, United States -- Iowa. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=736845501&sid=31&Fmt=2&clientId=52110&RQT=309&VName=PQD

Clark, B. (2001). A summary of thinking on measuring the value of marketing. *Journal of Targeting, Measurement and Analysis for Marketing*, *9*(4), 357-369. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1216893761&sid=32&Fmt=6&clientId=52110&RQT=309&VName=PQD

Collier, J., & Bienstock, C. (2006). Measuring service quality in e-retailing. *Journal of Service Research: JSR*, *8*(3), 260-275. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1016086341&sid=33&Fmt=4&clientId=52110&RQT=309&VName=PQD

Collier, J., & Bienstock, C. (2009). Model misspecification: Contrasting formative and reflective indicators for a model of e-service quality. *Journal of Marketing Theory and Practice*, *17*(3), 283-293. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1763801641&sid=33&Fmt=4&clientId=52110&RQT=309&VName=PQD

Collins, L. D. (2007). Online student support services: Perceived problems and strategies

to affect change. Ed.D. dissertation, Northcentral University, United States -- Arizona. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1276406761&sid=34&Fmt=2&clientId=52110&RQT=309&VName=PQD

Cooper, D., & Schindler, P. (2006). *Marketing research.* New York: The McGraw-Hill Companies, Inc.

Coulthard, L. (2004). Measuring service quality: A review and critique of research using SERVQUAL. *International Journal of Market Research, 46,* 479-497. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=734293841&sid=35&Fmt=2&clientId=52110&RQT=309&VName=PQD

Creswell, J. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks CA: Sage Publications, Inc.

Cronin, J., & Taylor, S. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing, 56*(3), 55. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=585139&sid=36&Fmt=3&clientId=52110&RQT=309&VName=PQD

Cronin, J., & Taylor, S. (1994). SERVPERF versus SERVQUAL; Reconciling performance-based and performance-minus-expectations measurements of service quality. *Journal of Marketing, 58*(1), 125. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=585256&sid=37&Fmt=3&clientId=52110&RQT=309&VName=PQD

De Chernatony, L., & Riley, F. D. (1999). Experts' views about defining services brands and the principles of services branding. *Journal of Business Research, 46*(2), 181-192. doi:10.1016/S0148-2963(98)00021-6

DePerro, D. R. (2006). The visibility is clear: Integrated marketing makes a difference in higher education. Ed.D. dissertation, University of Pennsylvania, United States -- Pennsylvania. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1126794861&sid=1&Fmt=2&clientId=52110&RQT=309&VName=PQD

Digest of Education Statistics. (2009). National Center for Education Statistics. Retrieved from http://nces.ed.gov/programs/digest/d08/tables/dt08_003.asp?referrer=report

Dillman, D., Smyth, J., & Christian, L. (2009). *Internet, mail, and mixed-mode surveys: The tailored design method.* Hoboken, NJ: John Wiley & Sons, Inc.

Dissertation handbook (2009). Prescott Valley, AZ: Northcentral University. Retrieved from http://learners.ncu.edu/ncu_diss/default.aspx

Edmiston-Strasser, D. (2007). An examination of integrated marketing communication in

U.S. public institutions of higher education. D.Mgt. dissertation, University of Maryland University College, United States -- Maryland. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1588769251&sid=3&Fmt=2&clientId=52110&RQT=309&VName=PQD

Emanuel, R., & Adams, J. N. (2006). Assessing college student perceptions of instructor customer service via the Quality of Instructor Service to Students (QISS) questionnaire. *Assessment and Evaluation in Higher Education, 31*(5), 535. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1149866911&sid=6&Fmt=2&clientId=52110&RQT=309&VName=PQD

Eng, L., & Keh, H. (2007). The effects of advertising and brand value on future operating and market performance. *Journal of Advertising, 36*(4), 91-100. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1424494381&sid=7&Fmt=3&clientId=52110&RQT=309&VName=PQD

Faircloth, J., Capella, L., & Alford, B. (2001). The effect of brand attitude and brand image on brand equity. *Journal of Marketing Theory and Practice, 9*(3), 61-75. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=95870026&sid=9&Fmt=4&clientId=52110&RQT=309&VName=PQD

Fishbein, M. and Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Frippiat, D., Marquis, N., & Wiles-Portier, E. (2010). Web Surveys in the Social Sciences: An Overview. *Population, English edition. 65*(2), 285-311. Retrieved from http://muse.jhu.edu/

Gabbard, R. B. (2004). Applying the technology acceptance model to online education. Ph.D. dissertation, Indiana University, United States -- Indiana. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=862898021&sid=10&Fmt=2&clientId=52110&RQT=309&VName=PQD

Gefen, D. (2002). Customer loyalty in e-commerce. *Journal of the Association for Information Systems, 3*, 27-51. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=748329631&sid=15&Fmt=2&clientId=52110&RQT=309&VName=PQD

Gronroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing, 18*(4), 36. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1068341&sid=16&Fmt=2&clientId=52110&RQT=309&VName=PQD

Ham, C. L. (2003). Service quality, customer satisfaction, and customer behavioral intentions in higher education. D.B.A. dissertation, Nova Southeastern University,

United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=765876151&sid=17&Fmt=2&clientId=52110&RQT=309&VName=PQD

Harris, B. L. (2002). A study of service quality: Gap analysis of expectations versus performance perceptions of junior, senior, and graduate students. PhD dissertation, The University of Alabama at Birmingham, United States -- Alabama. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=765002211&sid=19&Fmt=2&clientId=52110&RQT=309&VName=PQD

Holbrook, M., & Corfman, K. (1985). Quality and value in the consumption experience: Phaldrus rides again. In J. Jacoby & J. Olson (Ed.), *Perceived Quality* (pp. 31-57). Lexington, MA: Lexington Books.

Houser, J. (2007). How many are enough? Statistical power analysis and sample size estimation in clinical research. *Journal of Clinical Research Best Practices*, *3*(3). Retrieved from https://learners.ncu.edu/course/Default.asp?TB=TABResources&course_code=RSH8963QN-B&learner_course_id=76397&assignment_number=

Judd, K. S. (1998). Academic and service quality in distance education: Using gap analysis in program evaluation. Ph.D. dissertation, University of Denver, United States -- Colorado. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=737687941&sid=2&Fmt=2&clientId=52110&RQT=309&VName=PQD

Jun, M. (2007). Restructuring SERVQUAL. American Marketing Association. Conference Proceedings, 17, 219. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1169416901&sid=12&Fmt=2&clientId=52110&RQT=309&VName=PQD

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, *57*(1), 1. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=585174&sid=13&Fmt=3&clientId=52110&RQT=309&VName=PQD

Keller, K. L. (2001). Building customer-based brand equity. *Marketing Management*, *10*(2), 14-19. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=77222384&sid=13&Fmt=4&clientId=52110&RQT=309&VName=PQD

Keller, K. L. (2003). Brand Synthesis: The Multidimensionality of Brand Knowledge. *Journal of Consumer Research*, *29*(4), 595-600. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=331978811&sid=13&Fmt=2&clientId=52110&RQT=309&VName=PQD

Kerlin, C. A. (2000). Measuring student satisfaction with the service processes of

selected student educational support services at Everett Community College. Ed.D. dissertation, Oregon State University, United States -- Oregon. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=731794761&sid=14&Fmt=2&clientId=52110&RQT=309&VName=PQD

Keystone, P. (2008). Antecedents of online consumers' intention to buy. D.B.A. dissertation, Nova Southeastern University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1528418831&sid=1&Fmt=2&clientId=52110&RQT=309&VName=PQD

Kotler, P., & Keller, K. (2006). *Marketing management* (12th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

LaBay, D. G., & Comm, C. L. (2003). A case study using gap analysis to assess distance learning versus traditional course delivery. *The International Journal of Educational Management, 17*(6/7), 312-317. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=478324061&sid=15&Fmt=4&clientId=52110&RQT=309&VName=PQD

Lancendorfer, K. (2007). The branding of higher education: The great awakening in the hallowed halls of academia. *American Academy of Advertising. Conference. Proceedings (Online),* 242-247. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1446331561&sid=16&Fmt=3&clientId=52110&RQT=309&VName=PQD

Lee, Y., Tseng, S. P., Liu, F. J., & Liu, S. C. (2007). Antecedents of learner satisfaction toward e-learning. *Journal of American Academy of Business, 11*(2), 161-168. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1287753381&sid=17&Fmt=4&clientId=52110&RQT=309&VName=PQD

Leu, W. (2009). The relationship between web-based service quality and customer loyalty. D.B.A. dissertation, Nova Southeastern University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1784700221&sid=18&Fmt=2&clientId=52110&RQT=309&VName=PQD

Mathews, J., & Kinzie, S. (2006, April 7). Colleges, Awash in Applications, Turning Away Even Top Students. *The Washington Post*, p. A.01. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1016882741&sid=19&Fmt=3&clientId=52110&RQT=309&VName=PQD

McDaniel, C., & Gates, R. (2005). *Marketing research* (6th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Merriman, K. (2006, January). Employers warm up to online education. *HR*

Magazine, *51*(1), 79-82. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=975468581&sid=20&Fmt=3&clientId=52110&RQT=309&VName=PQD

Messinger, P., Li, J., Stroulia, E., Galletta, D., Ge, X., & Choi, S. (2009). Seven Challenges to Combining Human and Automated Service. *Canadian Journal of Administrative Sciences*, *26*(4), 267-285. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1949829861&sid=22&Fmt=3&clientId=52110&RQT=309&VName=PQD

Mick, D. G., & Fournier, S. (1998). Paradoxes of technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research*, *25*(2), 123-147. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=34622101&sid=23&Fmt=2&clientId=52110&RQT=309&VName=PQD

New study: Online education up 17% to 4.6 Million. (2010, 26 January). US Newswire. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1947647031&sid=24&Fmt=3&clientId=52110&RQT=309&VName=PQD

Norusis, M. (2006). *SPSS 15.0 guide to data analysis*. Upper Saddle River, NJ: Prentice Hall.

Oliver, R. L. (1977). Effect of expectation and disconfirmation on post-exposure product evaluations: An alternative interpretation. *Journal of Applied Psychology*, *62*(4), 480-486. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1152179&sid=25&Fmt=2&clientId=52110&RQT=309&VName=PQD

Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing*, *57*(3), 25-49. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=7097898&sid=25&Fmt=2&clientId=52110&RQT=309&VName=PQD

Olshavsky, R. W., & Miller, J. A. (1972). Consumer expectations, product performance, and perceived product quality. *Journal of Marketing Research*, *9*(1), 19. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=66024546&sid=26&Fmt=6&clientId=52110&RQT=309&VName=PQD

Online education reaches new heights. (2007, 22 October). *US Newswire*. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1369626401&sid=27&Fmt=3&clientId=52110&RQT=309&VName=PQD

Online poll reveals postsecondary schools may not be reaching tomorrow's students. (2007, 9 July). *Business Wire*. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1301663371&sid=28&Fmt

=3&clientId=52110&RQT=309&VName=PQD

Overton, L. (2008, July). Winning round the sceptics. *E.learning Age*, 29-30. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1555070371&sid=29&Fmt=4&clientId=52110&RQT=309&VName=PQD

Page, C. & Lepkowska-White, E. (2002). Web equity: A framework for building consumer value in online companies. *The Journal of Consumer Marketing*, *19*(2/3), 231. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=238612331&sid=30&Fmt=4&clientId=52110&RQT=309&VName=PQD

Pakdil, F. & Harwood, T. (2005). Patient satisfaction in a preoperative assessment clinic: An analysis using SERVQUAL dimensions. *Total Quality Management & Business Excellence*, *16*(1), 15-30. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=781287681&sid=31&Fmt=2&clientId=52110&RQT=309&VName=PQD

Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS* (4th ed.). New York, NY: Open University Press.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, *49* (4), 41-50. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=7096743&sid=32&Fmt=2&clientId=52110&RQT=309&VName=PQD

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *64*, 12-40. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=590517&sid=32&Fmt=6&clientId=52110&RQT=309&VName=PQD

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *Journal of Marketing*, *58*(1), 111-124. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=585257&sid=32&Fmt=3&clientId=52110&RQT=309&VName=PQD

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research: JSR*, *7*(3), 213-233. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=785577921&sid=33&Fmt=4&clientId=52110&RQT=309&VName=PQD

Petruzzellis, L., D'Uggento, A., & Romanazzi, S. (2006). Student satisfaction and quality of service in Italian universities. *Managing Service Quality: Global Trends and*

Challenges in Services, 16(4), 349-364. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1091253631&sid=34&Fmt=3&clientId=52110&RQT=309&VName=PQD

Pulley, J. (2003). Romancing the Brand. *The Chronicle of Higher Education, 50*(9), A.30-A.32. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=462279641&sid=36&Fmt=3&clientId=52110&RQT=309&VName=PQD

Researcher's Toolkit. (2009). DSS Research. Retrieved from http://www.dssresearch.com/toolkit/sscalc/size_a1.asp

Rhodes, F. (2006). After 40 years of growth and change, higher education faces new challenges. *The Chronicle of Higher Education, 53*(14), A18-A20. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1194493851&sid=37&Fmt=3&clientId=52110&RQT=309&VName=PQD

Rios, R. E., & Riquelme, H. E. (2010). Sources of brand equity for online companies. Journal of Research in Interactive Marketing, 4(3), 214-240. doi:10.1108/17505931011070587

Ritter, L. A., & Sue, V. M. (2007). Introduction to using online surveys. *New Directions for Evaluation*, (115), 5-14. doi:10.1002/ev.230

Rohini, R., & Mahadevappa, B. (2006). Service quality in Bangalore hospitals: An empirical study. *Journal of Services Research, 6*(1), 59-68,70-76,78-79,81-84. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1235733261&sid=38&Fmt=3&clientId=52110&RQT=309&VName=PQD

Rossiter, J. (2007). Toward a valid measure of e-retailing service quality. *Journal of Theoretical and Applied Electronic Commerce Research, 2*(3), 36-48. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1404873861&sid=39&Fmt=3&clientId=52110&RQT=309&VName=PQD

Ruby, C. A. (1996) Assessment of student satisfaction with selected student support services using the SERVQUAL model of customer satisfaction. Ph.D. dissertation, Ohio University, United States -- Ohio. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=739249751&sid=41&Fmt=2&clientId=52110&RQT=309&VName=PQD

Sahu, A. (2006). Perceptions of service quality in an academic library: A case study. *Journal of Services Research, 6*(1), 187-204. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1235733301&sid=1&Fmt=3&clientId=52110&RQT=309&VName=PQD

Saravanan, R. and Rao, K. (2007). Measurement of service quality from the customer's

perspective: An empirical study. *Total Quality Management & Business Excellence*, *18*(3), 435-449. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1271280531&sid=2&Fmt=2&clientId=52110&RQT=309&VName=PQD

Sax, L. J., Gilmartin, S. K., & Bryant, A. N. (2003). Assessing Response Rates and Nonresponse Bias in Web and Paper Surveys. *Research in Higher Education*, 44(4), 409. Retrieved from EBSCO*host*.

Schwantz, G. D. (1996). Service quality in higher education: Expectations and perceptions of traditional and non-traditional students. Ph.D. dissertation, Texas Tech University, United States -- Texas. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=739528901&sid=3&Fmt=2&clientId=52110&RQT=309&VName=PQD

Sibley, R. (2007). Combining attitudinal and transaction-specific measures in latent constructs. *Innovative Marketing*, *3*(4), 41-50,137. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1533911781&sid=4&Fmt=3&clientId=52110&RQT=309&VName=PQD

Simmons, J. (2006). An investigation into the role of learning styles in student satisfaction with on-line learning environments. D.B.A. dissertation, Nova Southeastern University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1105002751&sid=5&Fmt=2&clientId=52110&RQT=309&VName=PQD

Siritongthaworn, S., & Krairit, D. (2006). Satisfaction in e-learning: the context of supplementary instruction. *Campus-Wide Information Systems*, *23*(2), 76-91. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1034812141&sid=6&Fmt=4&clientId=52110&RQT=309&VName=PQD

Sloan Survey of Online Learning. (2007). Sloan Consortium; Strong Growth in Online Education. Education Business Weekly, 14. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1597980561&sid=7&Fmt=3&clientId=52110&RQT=309&VName=PQD

Smith, G., Smith A., & Clarke, A. (2007). Evaluating service quality in universities: A service department perspective. *Quality Assurance in Education*, *15*(3), 334-351. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1323743311&sid=8&Fmt=3&clientId=52110&RQT=309&VName=PQD

Srivastava, R. K., & Shocker, A.D. (1991). *Brand equity: A perspective on its meaning and measurement*. Cambridge, MA: Marketing Science Institute.

State of the Field Survey. (2008). The Forum on Education Abroad. Carlisle, PA: Dickinson College.

Stodnick, M., & Rogers, P. (2008). Using SERVQUAL to measure the quality of the classroom experience. *Decision Sciences Journal of Innovative Education*, *6*(1), 115-133. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1428310291&sid=9&Fmt=2&clientId=52110&RQT=309&VName=PQD

Swaid, S., & Wigand, R. (2009). Measuring the quality of e-service: Scale development and initial validation. *Journal of Electronic Commerce Research*, *10*(1), 13-28. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1667036951&sid=12&Fmt=3&clientId=52110&RQT=309&VName=PQD

Swan, J. E., & Combs, L. J. (1976). Product performance and consumer satisfaction: A new concept. *Journal of Marketing*, *40*(2), 25-33. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=7096669&sid=13&Fmt=2&clientId=52110&RQT=309&VName=PQD

Tanner, J., Noser, T., & Totaro, M. (2009). Business faculty and undergraduate students' perceptions of online learning: A comparative study. *Journal of Information Systems Education*, *20*(1), 29-40. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1666755581&sid=14&Fmt=3&clientId=52110&RQT=309&VName=PQD

Tsai, J. (2007). Learning the recruitment ropes. *Customer Relationship Management*, *11*(9), 18. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1333186361&sid=15&Fmt=3&clientId=52110&RQT=309&VName=PQD

Tsoukatos, E., & Rand, G. (2006). Path analysis of perceived service quality, satisfaction and loyalty in Greek insurance. *Managing Service Quality*, *16*(5), 501-519. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1143410611&sid=17&Fmt=3&clientId=52110&RQT=309&VName=PQD

Trochim, W. M., & Donnelly, J. P. (2007). *The research methods knowledge base* (3rd ed.). Mason, OH: Thomson Custom Solutions.

Ugboma, C., Ibe, C., & Ogwude, I. C. (2004). Service quality measurements in ports of a developing economy: Nigerian ports survey. *Managing Service Quality*, *14*(6), 487-495. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=774602291&sid=18&Fmt=4&clientId=52110&RQT=309&VName=PQD

U.S. Census Bureau. (2008). *2007 Economic census: Table 1: Selected statistics by economic sector.* Retrieved from http://factfinder.census.gov/servlet/GQRTable?_bm=y&-geo_id=01000US&-ds_name=EC0700A1&-_lang=en

U.S. Census Bureau. (2010). *E-Stats*. Retrieved from http://www.census.gov/econ/estats/2008/2008reportfinal.pdf

West, C. (2008). Building education brands. *International Educator (1059-4221), 17*(5), 52-55. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1564268521&sid=21&Fmt=3&clientId=52110&RQT=309&VName=PQD

Wolde-Rufael, G. (2001). Measuring service quality of the Better Business Bureau using the SERVQUAL model. Ph.D. dissertation, Texas Tech University, United States -- Texas. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=728945441&sid=22&Fmt=2&clientId=52110&RQT=309&VName=PQD

Wu, K. (2006). Service quality, customer satisfaction, and customer loyalty in consumer electronics e-tailers: A structural equation modeling approach. Ph.D. dissertation, Lynn University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1144186301&sid=24&Fmt=2&clientId=52110&RQT=309&VName=PQD

Yomnak, T. (2006). Perceptions of service quality and customer satisfaction of Thai online shopping services. D.B.A. dissertation, Nova Southeastern University, United States -- Florida. Retrieved from http://proquest.umi.com.proxy1.ncu.edu/pqdweb?did=1303295671&sid=25&Fmt=2&clientId=52110&RQT=309&VName=PQD

Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2009). *Service marketing: Integrating customer focus across the firm* (5th ed.). New York: McGraw-Hill/Irwin.

Zeithaml, V. A., & Parasuraman, A. (2004). *Service quality*. Cambridge, MA: Marketing Science Institute.

Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1990). *Delivering quality service: Balancing customer perceptions and expectations.* New York: The Free Press.

Zikmund, W. G. (2003). *Business research methods* (7th ed.). Mason, OH: Thomson/South-Western.

Appendix A: Survey Questionnaire for the Study

This is a survey about your experiences with the support services offered by your School when you took an online course. We are interested in your opinions about the quality of the support services. Support services are services you access on the Internet or by telephone and include

- Enrollment Services -- Enrollment in your courses
- Financing and Accounting Services -- Applying financial aid and other payments to your account
- Student Advising -- Advising you on courses so that you can complete your academic program
- Technical Support -- Computer support when you need to access the classroom and other resources.

The purpose of this study is to determine possible relationships between your attitudes about service quality at your School and your perceptions of the value of the School. As a student, your answers may help improve service quality at your School. Your participation in this survey is voluntary, and you have the right to withdraw from the survey at any time. Your responses are confidential and will not be shared with anyone at the School. By completing the survey, you are acknowledging that you have read, understand, and consent to participation in the study.

Please answer all questions, giving your opinion about each. There are no right or wrong answers. Thank you for your time!

1. Are you currently enrolled or have you ever enrolled in an online course at a college or university in the United States?

☐ Yes (if "yes", please continue to Section 1)

☐ No (if "no", please stop. Thank you for your time.)

Section 1 – *Directions*: The following questions are for classification purposes. For each statement, please choose the one response that most closely describes your current status or situation.

2. My current age is

☐ Under 18 years of age

☐ 18 to 24 years of age

☐ 25 to 29 years of age

☐ 30 to 34 years of age

☐ 35 to 39 years of age

☐ 40 to 49 years of age
☐ 50 to 59 years of age
☐ 60 years old or older

3. My gender is

☐ Male
☐ Female

4. My current degree program or program of study is

☐ Non-degree program
☐ Associates degree
☐ Bachelor's degree
☐ Master's degree
☐ Doctoral degree

5. Including the courses I am currently taking (if currently enrolled), the number of online courses I have taken at the School is

☐ 1 to 2
☐ 3 to 5
☐ 6 to 10
☐ More than 10

6. The name of the college or university where I took my online classes is _____.

Section 2 – *Directions*: Based on your experiences as a student taking an online course, please think about your feelings about your School's services. For each statement, please show the extent to which you believe your School has the feature described by the statement. Indicating a "1" means that you strongly disagree that your School has that feature, and indicating a "7" means that you strongly agree. You may indicate any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers – all that we are interested in is a number that best shows your perceptions about your School's services.

7. When the School promises to do something by a certain time, it does so.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

8. The School gives students individual attention.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

9. The School has modern-looking web sites.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

10. Employees of the School tell students exactly when services will be performed.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

11. The behavior of employees of the School instills confidence in students.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

12. When students have a problem, the School shows a sincere interest in solving it.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

13. The School has operating hours convenient to all its students.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

14. The web site applications at the School are easy to use.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

15. Employees of the School give you prompt service.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

16. You feel safe in your transactions with the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

17. The School performs the service right the first time.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

18. The School has employees who give you personal attention.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

19. Employees of the School are professional in telephone and email correspondence.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

20. Employees of the School are always willing to help you.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

21. Employees of the School are consistently courteously with you.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

22. The School provides its services at the time it promises to do so.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

23. The School has your best interests at heart.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

24. Materials associated with the service (such as information handouts and application forms) are visually appealing at the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

25. Employees of the School are never too busy to respond to your requests.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

26. Employees of the School have the knowledge to answer your questions.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

27. The School insists on error-free records.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

28. Employees of the School understand your specific needs.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Section 3 -- *Directions*: Listed below are five features pertaining to colleges and the services they offer. We would like to know how important each of these features is to *you* when you evaluate an online college's quality of the services offered. Please allocate a total of 100 points among the five features *according to how important each feature is to you* – the more important a feature is to you, the more points you should allocate to it.

29. Please ensure that the points you allocate to the five features add up to 100 points.

___ The appearance and professionalism of the School web site, materials, and personnel.

___ The ability of the School to perform the promised service dependably and accurately.

___ The willingness of the School to help students and provide prompt service.

___ The knowledge and courtesy of the School's employees and their ability to convey trust and confidence.

___ The caring, individualized attention the School provides its students.

100 Total points allocated

Section 4 – *Directions*: The following set of statements relates to your feelings about your overall experiences with your School. For each statement, please show the extent to which you believe your relationship with the School is described by the statement. Once again, indicating a "1" means that you strongly disagree with the statement, and indicating a "7" means that you strongly agree. You may indicate any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers – all that we are interested in is a number that best shows your feelings about your overall relationship with the School.

30. I feel related to the type of students who are the School's students.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

31. The School's web site provides easy-to-follow navigation.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

32. The School is willing and ready to respond to student needs.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

33. I trust the School to keep my personal information safe.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

34. I got the support services I expected from the School web site.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

35. I feel like the School actually cares about me.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

36. I never feel lost when navigating through the School's web site.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

37. The School's web site gives students the opportunity to "talk back" to the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

38. I feel safe in my transactions with the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

39. Support services are delivered by the time promised by the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

40. I feel as though the School really understands me.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

41. I am able to obtain the information I want without any delay at the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Section 5 -- *Directions*: The statements relate to your overall satisfaction with your experiences with your School. Please show the extent to which you are satisfied or dissatisfied with your experiences at the School. Once again, indicating a "1" means that you strongly disagree with the statement, and indicating a "7" means that you strongly agree. You may indicate any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers – all that we are interested in is a number that best shows your feelings about your overall satisfaction with the School.

42. I am satisfied with my overall experiences at the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

43. I am satisfied that the School offers a good value for the money I pay for tuition and fees.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Section 6 -- *Directions*: The following statements relate to your future intentions with the School. For each statement, please show the extent to which you agree or disagree with the statement about your future intentions. Once again, indicating a "1" means that you strongly disagree with the statement, and indicating a "7" means that you strongly agree. You may indicate any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers – all that we are interested in is a number that best shows your future intentions with the School.

44. I intend to complete my program of study through The School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

45. I intend to recommend the School to friends or other students seeking online higher education.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

46. If I have the opportunity, I intend to pursue additional academic programs through the School.

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Thank you for your time and your responses!

Appendix B: The Original SERVQUAL Instrument

THE SERVQUAL INSTRUMENT[a]

DIRECTIONS: This survey deals with your opinions of ——— services. Please show the extent to which you think firms offering ——— services should possess the features described by each statement. Do this by picking one of the seven numbers next to each statement. If you strongly agree that these firms should possess a feature, circle the number 7. If you strongly disagree that these firms should possess a feature, circle 1. If your feelings are not strong, circle one of the numbers in the middle. There are no right or wrong answers—all we are interested in is a number that best shows your expectations about firms offering ——— services.

E1. They should have up-to-date equipment.
E2. Their physical facilities should be visually appealing.
E3. Their employees should be well dressed and appear neat.
E4. The appearance of the physical facilities of these firms should be in keeping with the type of services provided.
E5. When these firms promise to do something by a certain time, they should do so.
E6. When customers have problems, these firms should be sympathetic and reassuring.
E7. These firms should be dependable.
E8. They should provide their services at the time they promise to do so.
E9. They should keep their records accurately.
E10. They shouldn't be expected to tell customers exactly when services will be performed. (−)[b]
E11. It is not realistic for customers to expect prompt service from employees of these firms. (−)
E12. Their employees don't always have to be willing to help customers. (−)
E13. It is okay if they are too busy to respond to customer requests promptly. (−)
E14. Customers should be able to trust employees of these firms.
E15. Customers should be able to feel safe in their transactions with these firms' employees.
E16. Their employees should be polite.

Appendix C: The E-S-QUAL Scale for Online Environments

E-S-QUAL

Respondents rated the Web site's performance on each scale item using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The items below are grouped by dimension for expositional convenience; they appeared in random order on the survey. The symbols preceding the items correspond to the variable names in Tables 1 and 5 in the body of the article.

Efficiency

EFF1	This site makes it easy to find what I need.
EFF2	It makes it easy to get anywhere on the site.
EFF3	It enables me to complete a transaction quickly.
EFF4	Information at this site is well organized.
EFF5	It loads its pages fast.
EFF6	This site is simple to use.
EFF7	This site enables me to get on to it quickly.
EFF8	This site is well organized.

System Availability

SYS1	This site is always available for business.
SYS2	This site launches and runs right away.
SYS3	This site does not crash.
SYS4	Pages at this site do not freeze after I enter my order information.

Fulfillment

FUL1	It delivers orders when promised.
FUL2	This site makes items available for delivery within a suitable time frame.
FUL3	It quickly delivers what I order.
FUL4	It sends out the items ordered.
FUL5	It has in stock the items the company claims to have.
FUL6	It is truthful about its offerings.
FUL7	It makes accurate promises about delivery of products.

Privacy

PRI1	It protects information about my Web-shopping behavior.
PRI2	It does not share my personal information with other sites.
PRI3	This site protects information about my credit card.

E-RecS-QUAL

Respondents rated the Web site's performance on each scale item using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The items below are grouped by dimension for expositional convenience; they appeared in random order on the survey. The symbols preceding the items correspond to the variable names in Table 2 in the body of the article.

Responsiveness

RES1	It provides me with convenient options for returning items.
RES2	This site handles product returns well.
RES3	This site offers a meaningful guarantee.
RES4	It tells me what to do if my transaction is not processed.
RES5	It takes care of problems promptly.

Compensation

COM1	This site compensates me for problems it creates.
COM2	It compensates me when what I ordered doesn't arrive on time.
COM3	It picks up items I want to return from my home or business.

Contact

CON1	This site provides a telephone number to reach the company.
CON2	This site has customer service representatives available online.
CON3	It offers the ability to speak to a live person if there is a problem.

Perceived Value

The value measure consisted of four items; respondents rated the Web site on each item using a scale of 1 (*poor*) to 10 (*excellent*).

1. The prices of the products and services available at this site (how economical the site is).
2. The overall convenience of using this site.
3. The extent to which the site gives you a feeling of being in control.
4. The overall value you get from this site for your money and effort.

Loyalty Intentions

The loyalty measure consisted of five behavioral items; respondents indicated their likelihood of engaging in each behavior on a 5-point scale (1 = *very unlikely*, 5 = *very likely*).

How likely are you to . . .

1. Say positive things about this site to other people?
2. Recommend this site to someone who seeks your advice?
3. Encourage friends and others to do business with this site?
4. Consider this site to be your first choice for future transactions?
5. Do more business with this site in the coming months?

Appendix D: Scale Items Tested for the Online Retail/Service (ORS) Model

Emotional Connection

X_1: I feel related to the type of people who are [X]'s customers

X_2: I feel like [X] actually cares about me

X_3: I feel as though [X] really understands me

Online Experience

X_4: [X]'s website provides easy-to-follow search paths

X_5: I never feel lost when navigating through [X]'s website

X_6: I was able to obtain the information I wanted without any delay

Responsive Service Nature

X_7: [X] is willing and ready to respond to customer needs

X_8: [X]'s website gives visitors the opportunity to 'talk back' to [X]

Trust

X_9: I trust [X] to keep my personal information safe

X_{10}: I feel safe in my transactions with [X]

Fulfilment

X_{11}: I got what I ordered from [X]'s web site

X_{12}: The product was delivered by the time promised by [X]

Appendix E: Permission to Use SERVQUAL Scale

RE: THE SERVQUAL INSTRUMENT scale
...
"Parasuraman, A" <aparasur@bus.miami.edu>
From: ...
Add to Contacts
To: "chuckjar@yahoo.com" <chuckjar@yahoo.com>
Cc: "Berry, Leonard" <L-Berry@mays.tamu.edu>; "Zeithaml, Valarie" <valariez@unc.edu>

Thanks for requesting permission to translate use SERVQUAL in your study as outlined in your email. On behalf of my coauthors (Professors Berry and Zeithaml) and myself, I am pleased to grant you that permission. The only condition is that you appropriately cite our work in all oral and written presentations of your findings. Best wishes for success with your study.

Sincerely,

A. "Parsu" Parasuraman
Professor of Marketing & Holder of the James W. McLamore Chair
Director of PhD Programs
School of Business Administration
University of Miami
Coral Gables, FL 33124-6520
Tel: 305-284-5743/Fax: 305-284-6526
parsu@miami.edu
http://www.bus.miami.edu/faculty-and-research/faculty-directory/marketing/parasuraman/index.html

UNIVERSITY OF MIAMI
SCHOOL of BUSINESS
ADMINISTRATION

From: Chuck Jarrell [chuckjar@yahoo.com]
Sent: Friday, November 26, 2010 12:51 PM
To: parsu@miami.edu
Subject: Request for Use of SERVQUAL
Dear Dr. Parasuraman,

I am a doctoral candidate at Northcentral University (NCU) in Prescott Valley, AZ. I plan to conduct quantitative research for my dissertation on the topic of relating service quality to brand equity. My dissertation is entitled "An Examination of Possible Relationships Between Service Quality and Brand Equity in Online Higher Education".

I am seeking your permission to use the SERVQUAL scale as the basis for assessing service quality in a survey of students taking online courses. Furthermore, I am seeking your permission to acknowledge use of SERVQUAL in my dissertation manuscript, with appropriate attribution to the original source. At your request, I will be most happy to send you a copy of my dissertation proposal once approved by my committee and the School of Business at NCU.

Thank you for consideration of my requests. Best personal regards.

Sincerely,
Charles M. Jarrell
chuckjar@yahoo.com
602.370.5256

Appendix F: Permission to Use ORS Scale

Dear Chuck

Thanks for your kind email. It is absolutely fine with me to use the ORS brand equity scale for your doctoral research.

Good luck with your PhD.

Kind regards,
George

Dr George Christodoulides
Birmingham Business School
University of Birmingham
Edgbaston Park Road
Edgbaston
Birmingham B15 2TT
t. +44 121 414 8343
f. +44 121 414 7791
e. G.Christodoulides@bham.ac.uk
http://www.business.bham.ac.uk/marketing/

UNIVERSITY OF BIRMINGHAM [Department of Marketing] The Chartered Institute of Marketing EFMD EQUIS

From: Chuck Jarrell [mailto:chuckjar@yahoo.com]
Sent: 26 November 2010 18:00
To: George Christodoulides
Subject: Request for Use of the Online Retail/Service

Dear Dr. Christodoulides,

I am a doctoral candidate at Northcentral University (NCU) in Prescott Valley, AZ, USA. I plan to conduct quantitative research for my dissertation on the topic of relating service quality to online brand equity. My dissertation is entitled "An Examination of Possible Relationships Between Service Quality and Brand Equity in Online Higher Education".

I am seeking your permission to use the online retail/service (ORS) brand equity scale as the basis for assessing online brand equity in a survey of students taking online courses. Furthermore, I am seeking your permission to acknowledge use of the ORS scale in my dissertation manuscript, with appropriate attribution to the original source. At your request, I will be most happy to send you a copy of my dissertation proposal once approved by my committee and the School of Business at NCU.

Thank you for consideration of my requests. Best personal regards.
Sincerely,
Charles M. Jarrell
chuckjar@yahoo.com
602.370.5256

Appendix G: Emails to Improve Response

1. Email introduction to the survey (sent 3 days before invitation email)

   Subject: I need your help

   My doctoral dissertation is about how colleges and universities provide services to students taking online classes. I am conducting a survey of students and need your help. If you have taken an online class, you can complete the survey. If not, perhaps you know students and might be willing to invite them to complete my survey by forwarding my email.

   In the next few days, you will receive an email inviting you to take a short survey. The email will have a web link, and if you click on it, you will be taken to a third-party web site. You can then follow the instructions included with the survey.

   Would you be willing to forward my email to college students you know? If so, please think about whom to include. You may forward the email to as many college students you know (relatives, friends, church members, etc.). You may also forward the email to others who know college students and might be willing to invite them to participate.

   All responses to the survey will be completely confidential. The individual responses to the survey will not be shared. Therefore, I want all respondents to be candid and open with their feedback.

   Colleges and universities will benefit from the survey results. The results might also encourage schools to improve services that benefit students. Thank you for considering my request, and I will be back in touch in a few days.

   (Signed)

2. Invitation to the survey (sent on day survey is available to students)

   Subject: Please Respond to My Survey

   A few days ago, I emailed asking for your help. I am conducting a survey of college and university students who have taken online courses. The survey asks about support services and how students evaluated the services and the school. If you have taken an online course, please click the link below, read the instructions, and take the survey. The survey will take about 8 to 10 minutes, and your responses are completely confidential.

   (Web link to third-party web site)

   Would you be willing to forward my email to college students you know? If you are a student, please forward this email to your classmates or friends who are in school. If you are not a student, perhaps you know students who are relatives, friends, children of

friends, etc. Please forward this email to every college student you know. You may also forward the email to others who know college students and might be willing to invite them to participate.

I appreciate your help! I am hoping to get broad participation from students throughout the United States and encourage you to forward this email.

Thank you!

(Signed)

PS – I encourage you to take the survey and forward the email right away. I want to finish my studies soon! I will send a brief reminder email in a few days, but please don't wait.

3. Reminder email 1 (sent five days after invitation email)

   Subject: A Quick Reminder – Please Complete My Survey and Forward This Email Today

   If you have completed my survey or forwarded my email to college students you know, THANK YOU! Have a great day, and simply delete this email.

   This survey asks college and university students who have taken online courses to evaluate the support services they received. If you have not taken the survey, won't you take a few minutes right now? The survey will take about 8 to 10 minutes, and your responses are completely confidential. Simply click on this link, read the instructions, and take the survey.

   (Web link to third-party web site)

   Would you be willing to forward my email to college students you know? If you are a student, please forward this email to your classmates or friends who are in school. If you are not a student, perhaps you know students who are relatives, friends, children of friends, etc. Please forward this email to every college student you know. You may also forward the email to others who know college students and might be willing to invite them to participate.

   Thank you for your help!

   (Signed)

4. Last reminder email 2 (sent 15 days after invitation email)

   Subject: Last Reminder – Please Help with My Survey

I don't want to bother you further, so this is the last reminder about my survey. Please delete this email if you have already completed the survey or forwarded my email to other students.

This survey asks college and university students who have taken an online course to evaluate the support services they received. If you have not taken the survey, won't you take a few minutes right now? The survey will take about 8 to 10 minutes, and your responses are completely confidential. Simply click on this link, read the instructions, and take the survey.

(Web link to third-party web site)

If you haven't already, would you be willing to forward my email to college students you know? If you are a student, please forward this email to your classmates or friends who are in school. If you are not a student, perhaps you know students who are relatives, friends, children of friends, etc. Please forward this email to every college student you know.

Thank you!

(Signed)

Appendix H: Summary of Raw Responses to Section 2 – SERVQUAL Items

When the School promises to do something by a certain time, it does so.

Item 1		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	13	7.3	7.3	10.2
	3	18	10.2	10.2	20.3
	4	20	11.3	11.3	31.6
	5	34	19.2	19.2	50.8
	6	52	29.4	29.4	80.2
Strongly agree	7	35	19.8	19.8	100.0
	Total	177	100.0	100.0	

The School gives students individual attention.

Item 2		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	4	2.3	2.3	2.3
	2	17	9.6	9.6	11.9
	3	22	12.4	12.4	24.3
	4	23	13.0	13.0	37.3
	5	39	22.0	22.0	59.3
	6	40	22.6	22.6	81.9
Strongly agree	7	32	18.1	18.1	100.0
	Total	177	100.0	100.0	

The School has modern-looking web sites.

Item 3		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	4	2.3	2.3	5.1
	3	12	6.8	6.8	11.9
	4	15	8.5	8.5	20.3
	5	34	19.2	19.2	39.5
	6	58	32.8	32.8	72.3
Strongly agree	7	49	27.7	27.7	100.0
	Total	177	100.0	100.0	

Employees of the School tell students exactly when services will be performed.

Item 4		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	3	1.7	1.7	1.7
	2	12	6.8	6.8	8.5
	3	20	11.3	11.3	19.8
	4	25	14.1	14.1	33.9
	5	41	23.2	23.2	57.1
	6	41	23.2	23.2	80.2
Strongly agree	7	35	19.8	19.8	100.0
	Total	177	100.0	100.0	

The behavior of employees of the School instills confidence in students.

Item 5		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	4	2.3	2.3	2.3
	2	12	6.8	6.8	9.0
	3	14	7.9	7.9	16.9
	4	28	15.8	15.8	32.8
	5	37	20.9	20.9	53.7
	6	48	27.1	27.1	80.8
	7	34	19.2	19.2	100.0
	Total	177	100.0	100.0	

When students have a problem, the School shows a sincere interest in solving it.

Item 6		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	6	3.4	3.4	3.4
	2	13	7.3	7.3	10.7
	3	18	10.2	10.2	20.9
	4	28	15.8	15.8	36.7
	5	29	16.4	16.4	53.1
	6	48	27.1	27.1	80.2
Strongly agree	7	35	19.8	19.8	100.0
	Total	177	100.0	100.0	

The School has operating hours convenient to all its students.

Item 7		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	12	6.8	6.8	9.6
	3	10	5.6	5.6	15.3
	4	18	10.2	10.2	25.4
	5	33	18.6	18.6	44.1
	6	51	28.8	28.8	72.9
Strongly agree	7	48	27.1	27.1	100.0
	Total	177	100.0	100.0	

The web site applications at the School are easy to use.

Item 8		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	9	5.1	5.1	7.9
	3	20	11.3	11.3	19.2
	4	22	12.4	12.4	31.6
	5	26	14.7	14.7	46.3
	6	50	28.2	28.2	74.6
Strongly agree	7	45	25.4	25.4	100.0
	Total	177	100.0	100.0	

Employees of the School give you prompt service.

Item 9		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	10	5.6	5.6	8.5
	3	21	11.9	11.9	20.3
	4	24	13.6	13.6	33.9
	5	49	27.7	27.7	61.6
	6	40	22.6	22.6	84.2
Strongly agree	7	28	15.8	15.8	100.0
	Total	177	100.0	100.0	

You feel safe in your transactions with the School

Item 10		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	10	5.6	5.6	5.6
	2	3	1.7	1.7	7.3
	3	7	4.0	4.0	11.3
	4	18	10.2	10.2	21.5
	5	33	18.6	18.6	40.1
	6	54	30.5	30.5	70.6
Strongly agree	7	52	29.4	29.4	100.0
	Total	177	100.0	100.0	

The School performs the service right the first time.

Item 11		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	6	3.4	3.4	3.4
	2	16	9.0	9.0	12.4
	3	18	10.2	10.2	22.6
	4	25	14.1	14.1	36.7
	5	37	20.9	20.9	57.6
	6	44	24.9	24.9	82.5
Strongly agree	7	31	17.5	17.5	100.0
	Total	177	100.0	100.0	

The School has employees who give you personal attention.

Item 12		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	6	3.4	3.4	3.4
	2	9	5.1	5.1	8.5
	3	15	8.5	8.5	16.9
	4	17	9.6	9.6	26.6
	5	37	20.9	20.9	47.5
	6	45	25.4	25.4	72.9
Strongly agree	7	48	27.1	27.1	100.0
	Total	177	100.0	100.0	

Employees of the School are professional in telephone and email correspondence.

Item 13		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	7	4.0	4.0	4.0
	2	6	3.4	3.4	7.3
	3	6	3.4	3.4	10.7
	4	14	7.9	7.9	18.6
	5	25	14.1	14.1	32.8
	6	53	29.9	29.9	62.7
Strongly agree	7	66	37.3	37.3	100.0
	Total	177	100.0	100.0	

Employees of the School are always willing to help you.

Item 14		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	8	4.5	4.5	4.5
	2	9	5.1	5.1	9.6
	3	14	7.9	7.9	17.5
	4	10	5.6	5.6	23.2
	5	37	20.9	20.9	44.1
	6	53	29.9	29.9	74.0
Strongly agree	7	46	26.0	26.0	100.0
	Total	177	100.0	100.0	

Employees of the School are consistently courteously with you.

Item 15		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	4	2.3	2.3	2.3
	2	8	4.5	4.5	6.8
	3	11	6.2	6.2	13.0
	4	13	7.3	7.3	20.3
	5	36	20.3	20.3	40.7
	6	53	29.9	29.9	70.6
Strongly agree	7	52	29.4	29.4	100.0
	Total	177	100.0	100.0	

The School provides its services at the time it promises to do so.

Item 16		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	4	2.3	2.3	2.3
	2	12	6.8	6.8	9.0
	3	17	9.6	9.6	18.6
	4	22	12.4	12.4	31.1
	5	35	19.8	19.8	50.8
	6	50	28.2	28.2	79.1
Strongly agree	7	36	20.3	20.3	99.4
	11	1	.6	.6	100.0
	Total	177	100.0	100.0	

The School has your best interests at heart.

Item 17		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	11	6.2	6.2	6.2
	2	10	5.6	5.6	11.9
	3	18	10.2	10.2	22.0
	4	28	15.8	15.8	37.9
	5	36	20.3	20.3	58.2
	6	32	18.1	18.1	76.3
Strongly agree	7	42	23.7	23.7	100.0
	Total	177	100.0	100.0	

Materials associated with the service (such as information handouts and application forms) are visually appealing at the School.

Item 18		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	8	4.5	4.5	7.3
	3	14	7.9	7.9	15.3
	4	29	16.4	16.4	31.6
	5	43	24.3	24.3	55.9
	6	38	21.5	21.5	77.4
	7	40	22.6	22.6	100.0
	Total	177	100.0	100.0	

Employees of the School are never too busy to respond to your requests.

Item 19		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	9	5.1	5.1	5.1
	2	20	11.3	11.3	16.4
	3	22	12.4	12.4	28.8
	4	22	12.4	12.4	41.2
	5	46	26.0	26.0	67.2
	6	31	17.5	17.5	84.7
Strongly agree	7	27	15.3	15.3	100.0
	Total	177	100.0	100.0	

Employees of the School have the knowledge to answer your questions.

Item 20		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	6	3.4	3.4	3.4
	2	16	9.0	9.0	12.4
	3	10	5.6	5.6	18.1
	4	16	9.0	9.0	27.1
	5	43	24.3	24.3	51.4
	6	48	27.1	27.1	78.5
Strongly agree	7	38	21.5	21.5	100.0
	Total	177	100.0	100.0	

The School insists on error-free records.

Item 21		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	10	5.6	5.6	5.6
	2	10	5.6	5.6	11.3
	3	17	9.6	9.6	20.9
	4	42	23.7	23.7	44.6
	5	28	15.8	15.8	60.5
	6	35	19.8	19.8	80.2
Strongly agree	7	35	19.8	19.8	100.0
	Total	177	100.0	100.0	

Employees of the School understand your specific needs.

Item 22		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	10	5.6	5.6	5.6
	2	14	7.9	7.9	13.6
	3	14	7.9	7.9	21.5
	4	24	13.6	13.6	35.0
	5	36	20.3	20.3	55.4
	6	46	26.0	26.0	81.4
Strongly agree	7	33	18.6	18.6	100.0
	Total	177	100.0	100.0	

Appendix I: Summary of Raw Responses to Section 4 – ORS Items

I feel related to the type of students who are the School's students.

Item 1			Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree		1	9	5.1	5.1	5.1
		2	15	8.5	8.5	13.6
		3	18	10.2	10.2	23.7
		4	39	22.0	22.0	45.8
		5	40	22.6	22.6	68.4
		6	36	20.3	20.3	88.7
Strongly agree		7	20	11.3	11.3	100.0
		Total	177	100.0	100.0	

The School's web site provides easy-to-follow navigation.

Item 2			Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	Valid	1	5	2.8	2.8	2.8
		2	4	2.3	2.3	5.1
		3	22	12.4	12.4	17.5
		4	24	13.6	13.6	31.1
		5	41	23.2	23.2	54.2
		6	46	26.0	26.0	80.2
Strongly agree		7	35	19.8	19.8	100.0
		Total	177	100.0	100.0	

The School is willing and ready to respond to student needs.

Item 3			Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	Valid	1	5	2.8	2.8	2.8
		2	8	4.5	4.5	7.3
		3	13	7.3	7.3	14.7
		4	20	11.3	11.3	26.0
		5	58	32.8	32.8	58.8
		6	41	23.2	23.2	81.9
Strongly agree		7	32	18.1	18.1	100.0
		Total	177	100.0	100.0	

I trust the School to keep my personal information safe.

Item 4		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	6	3.4	3.4	6.2
	3	6	3.4	3.4	9.6
	4	13	7.3	7.3	16.9
	5	35	19.8	19.8	36.7
	6	51	28.8	28.8	65.5
Strongly agree	7	61	34.5	34.5	100.0
	Total	177	100.0	100.0	

I got the support services I expected from the School web site.

Item 5		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	6	3.4	3.4	3.4
	2	2	1.1	1.1	4.5
	3	18	10.2	10.2	14.7
	4	22	12.4	12.4	27.1
	5	47	26.6	26.6	53.7
	6	47	26.6	26.6	80.2
Strongly agree	7	35	19.8	19.8	100.0
	Total	177	100.0	100.0	

I feel like the School actually cares about me.

Item 6		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	12	6.8	6.8	6.8
	2	10	5.6	5.6	12.4
	3	25	14.1	14.1	26.6
	4	23	13.0	13.0	39.5
	5	45	25.4	25.4	65.0
	6	30	16.9	16.9	81.9
Strongly agree	7	32	18.1	18.1	100.0
	Total	177	100.0	100.0	

I never feel lost when navigating through the School's web site.

Item 7		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	8	4.5	4.5	4.5
	2	17	9.6	9.6	14.1
	3	24	13.6	13.6	27.7
	4	26	14.7	14.7	42.4
	5	38	21.5	21.5	63.8
	6	36	20.3	20.3	84.2
Strongly agree	7	28	15.8	15.8	100.0
	Total	177	100.0	100.0	

The School's web site gives students the opportunity to "talk back" to the School.

Item 8		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	7	4.0	4.0	4.0
	2	13	7.3	7.3	11.3
	3	21	11.9	11.9	23.2
	4	41	23.2	23.2	46.3
	5	37	20.9	20.9	67.2
	6	30	16.9	16.9	84.2
	7	28	15.8	15.8	100.0
	Total	177	100.0	100.0	

I feel safe in my transactions with the School.

Item 9		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	7	4.0	4.0	6.8
	3	11	6.2	6.2	13.0
	4	20	11.3	11.3	24.3
	5	41	23.2	23.2	47.5
	6	44	24.9	24.9	72.3
Strongly agree	7	49	27.7	27.7	100.0
	Total	177	100.0	100.0	

Support services are delivered by the time promised by the School.

Item 10		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	5	2.8	2.8	2.8
	2	11	6.2	6.2	9.0
	3	16	9.0	9.0	18.1
	4	25	14.1	14.1	32.2
	5	47	26.6	26.6	58.8
	6	39	22.0	22.0	80.8
Strongly agree	7	34	19.2	19.2	100.0
	Total	177	100.0	100.0	

I feel as though the School really understands me.

Item 11		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	7	4.0	4.0	4.0
	2	16	9.0	9.0	13.0
	3	29	16.4	16.4	29.4
	4	33	18.6	18.6	48.0
	5	40	22.6	22.6	70.6
	6	28	15.8	15.8	86.4
Strongly agree	7	24	13.6	13.6	100.0
	Total	177	100.0	100.0	

I am able to obtain the information I want without any delay at the School.

Item 12		Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	1	7	4.0	4.0	4.0
	2	18	10.2	10.2	14.1
	3	23	13.0	13.0	27.1
	4	29	16.4	16.4	43.5
	5	42	23.7	23.7	67.2
	6	32	18.1	18.1	85.3
Strongly agree	7	26	14.7	14.7	100.0
	Total	177	100.0	100.0	

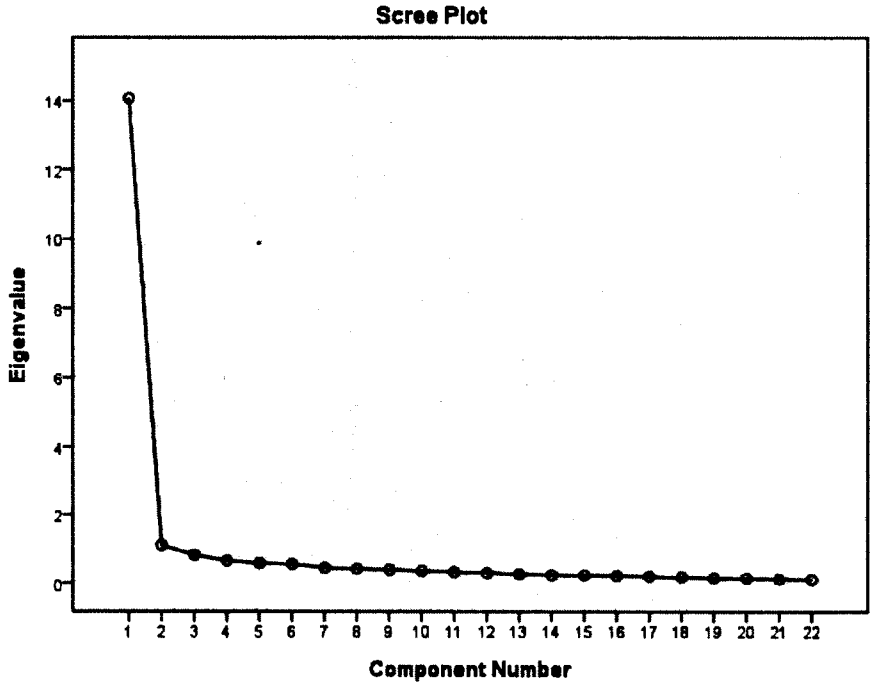
Appendix J: Factor Analysis of SERVQUAL Items

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	14.068	63.945	63.945	14.068	63.945	63.945	11.863
2	1.111	5.048	68.994	1.111	5.048	68.994	6.936
3	.827	3.760	72.754	.827	3.760	72.754	4.816
4	.663	3.013	75.767	.663	3.013	75.767	4.784
5	.588	2.672	78.438	.588	2.672	78.438	10.217
6	.560	2.547	80.985				
7	.454	2.065	83.050				
8	.425	1.930	84.980				
9	.395	1.797	86.778				
10	.362	1.644	88.422				
11	.332	1.511	89.933				
12	.300	1.366	91.299				
13	.270	1.229	92.528				
14	.245	1.114	93.642				
15	.240	1.092	94.734				
16	.223	1.015	95.749				
17	.203	.923	96.672				
18	.185	.842	97.515				
19	.156	.710	98.225				
20	.148	.674	98.899				
21	.127	.576	99.475				
22	.116	.525	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.



Component Matrix[a]

	Component				
	1	2	3	4	5
SQitem14res	.892				
SQitem22emp	.876				
SQitem20asr	.874				
SQitem16rel	.855				
SQitem5asr	.855				
SQitem12emp	.848				
SQitem15asr	.847				
SQitem6rel	.846				
SQitem9res	.832				
SQitem13tan	.824				-.343
SQitem11rel	.821				
SQitem19res	.821				
SQitem10asr	.821				
SQitem17emp	.815				
SQitem21rel	.798				
SQitem4res	.760		.376		
SQitem1rel	.756				-.353
SQitem2emp	.755				
SQitem7emp	.703	.318			
SQitem18tan	.658	.324		.478	
SQitem3tan	.638	.477	.365		
SQitem8tan	.614	.579			

Extraction Method: Principal Component Analysis.
a. 5 components extracted.

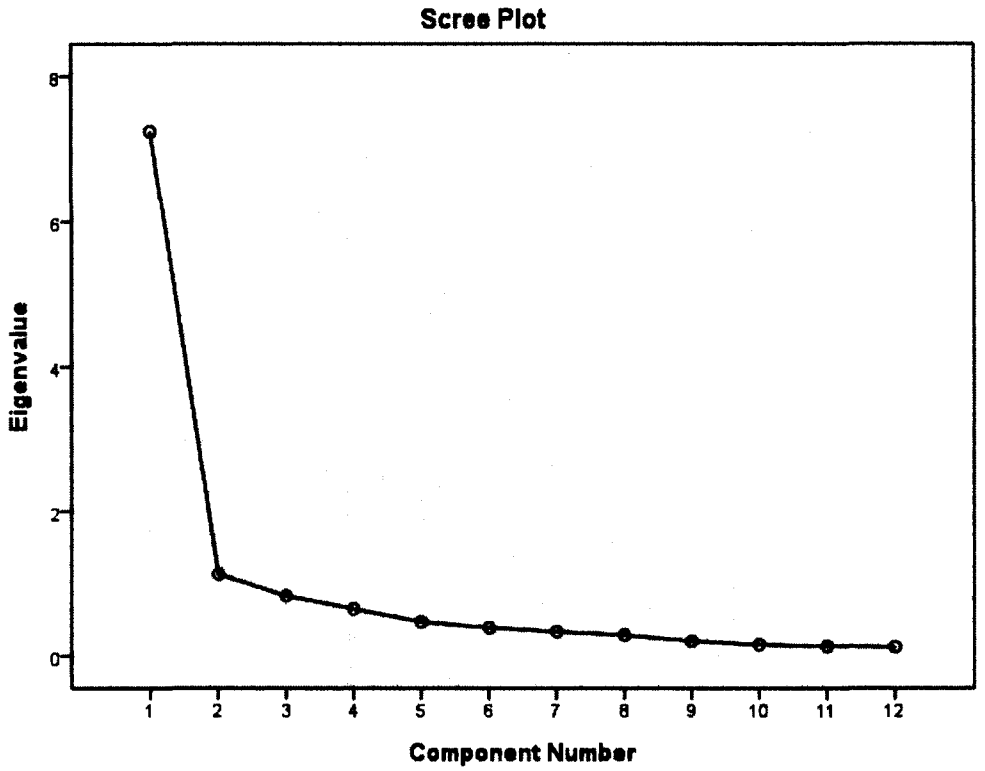
Appendix K: Factor Analysis of ORS Items

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.241	60.345	60.345	7.241	60.345	60.345	5.744
2	1.135	9.456	69.801	1.135	9.456	69.801	3.687
3	.830	6.917	76.717	.830	6.917	76.717	1.819
4	.653	5.446	82.163	.653	5.446	82.163	5.243
5	.476	3.964	86.127	.476	3.964	86.127	4.158
6	.396	3.296	89.423				
7	.340	2.831	92.254				
8	.295	2.457	94.711				
9	.210	1.747	96.457				
10	.160	1.332	97.790				
11	.137	1.142	98.932				
12	.128	1.068	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.



Component Matrix[a]

	Component				
	1	2	3	4	5
ORSitem12onlineexp	.868				
ORSitem3resservice	.863				
ORSitem10fulfill	.860				
ORSitem5fulfill	.856				
ORSitem9trust	.847			-.379	
ORSitem6emocon	.828				
ORSitem11emocon	.817				
ORSitem4trust	.798			-.481	
ORSitem8resservice	.727			.314	.569
ORSitem2onlineexp	.648	.585			
ORSitem7onlineexp	.631	.554			
ORSitem1emocon	.463	.422	.731		

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Appendix L: Output of Regression Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
ORSscore	4.904	1.20390	177
SERVQUALscore	5.108	1.31016	177
SATISFACTIONscore	5.12	1.663	177
PRICEscore	4.78	1.905	177
INTENDTOCOMPLETEscore	5.62	1.997	177
INTENDTORECOMMENDscore	4.97	1.898	177
INTENDTOREENROLLscore	4.45	1.980	177

Correlations (n = 177)

		ORS	SERVQUAL	SATISFACTION	PRICE	INTEND TO COMPLETE	INTEND TO RECOMMEND	INTEND TO REENROLL
Pearson Correlation	ORS	1.000	.880	.813	.696	.459	.604	.447
	SERVQUAL	.880	1.000	.751	.660	.460	.580	.405
	SATISFACTION	.813	.751	1.000	.776	.546	.718	.488
	PRICE	.696	.660	.776	1.000	.399	.658	.406
	INTENDTO COMPLETE	.459	.460	.546	.399	1.000	.593	.449
	INTENDTO RECOMMEND	.604	.580	.718	.658	.593	1.000	.598
	INTENDTO REENROLL	.447	.405	.488	.406	.449	.598	1.000
Sig. (1-tailed)	ORS	.	.000	.000	.000	.000	.000	.000
	SERVQUAL	.000	.	.000	.000	.000	.000	.000
	SATISFACTION	.000	.000	.	.000	.000	.000	.000
	PRICE	.000	.000	.000	.	.000	.000	.000
	INTENDTO COMPLETE	.000	.000	.000	.000	.	.000	.000
	INTENDTO RECOMMEND	.000	.000	.000	.000	.000	.	.000
	INTENDTO REENROLL	.000	.000	.000	.000	.000	.000	.

Variables Entered/Removed[a,]

Model	Variables Entered	Variables Removed	Method
1	SERVQUAL		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	SATISFACTION		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: ORSscore

Model Summary[c]

Model	R					Change Statistics				
	InQuota Sample = 1 (Selected)	InQuota Sample ~= 1 (Unselected)	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.880[a]		.774	.773	.57415	.774	598.815	1	175	.000
2	.909[b]	.884	.827	.825	.50343	.053	53.621	1	174	.000

a. Predictors: (Constant), SERVQUALscore

b. Predictors: (Constant), SERVQUALscore, SATISFACTIONscore

c. Dependent Variable: ORSscore

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.400	1	197.400	598.815	.000[a]
	Residual	57.689	175	.330		
	Total	255.089	176			
2	Regression	210.990	2	105.495	416.247	.000[b]
	Residual	44.099	174	.253		
	Total	255.089	176			

a. Predictors: (Constant), SERVQUALscore

b. Predictors: (Constant), SERVQUALscore, SATISFACTIONscore

c. Dependent Variable: ORSscore

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.775	.174		4.451	.000	.431	1.119					
	SERVQUAL	.808	.033	.880	24.471	.000	.743	.874	.880	.880	.880	1.000	1.000
2	(Constant)	.711	.153		4.650	.000	.409	1.013					
	SERVQUAL	.567	.044	.617	12.942	.000	.481	.654	.880	.700	.408	.437	2.291
	SATISFACTION	.253	.035	.349	7.323	.000	.185	.321	.813	.485	.231	.437	2.291

a. Dependent Variable: ORSscore

Excluded Variables[c]

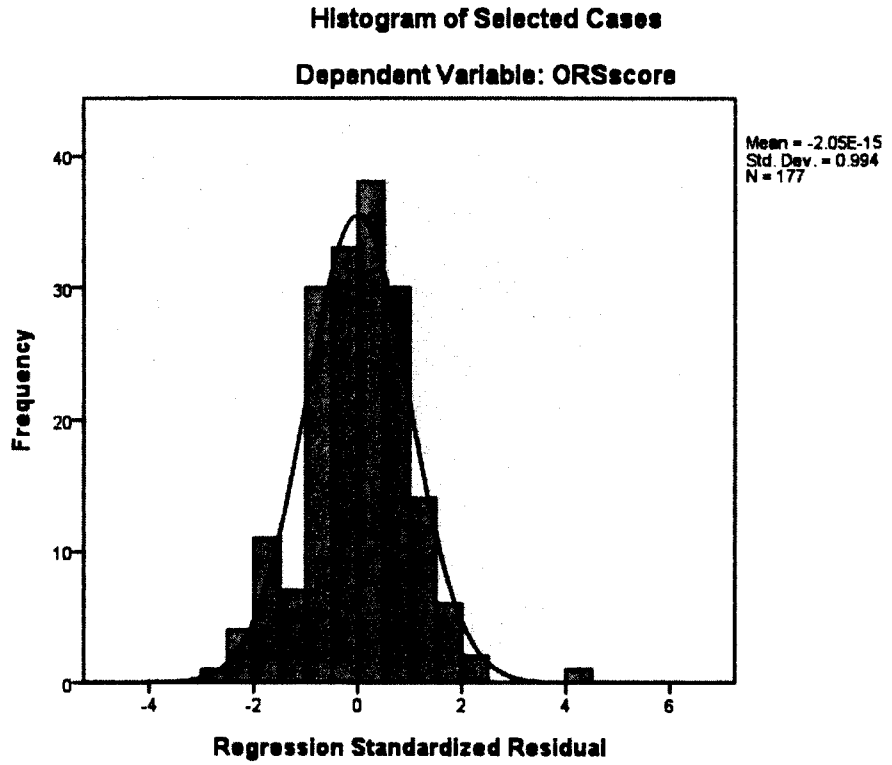
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance

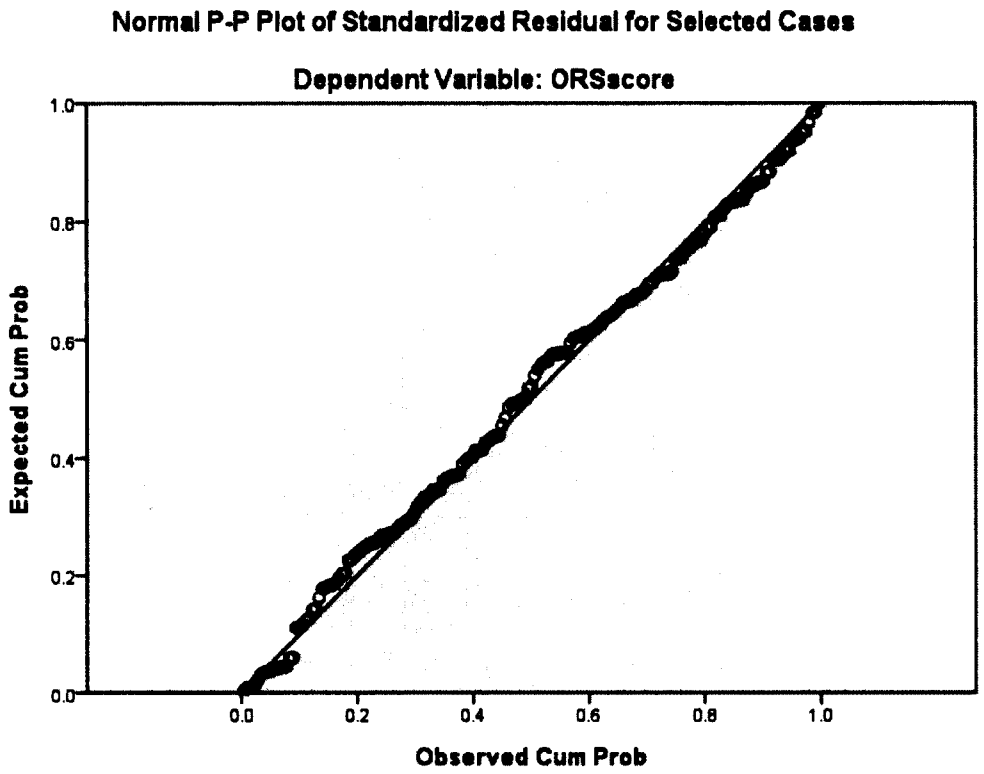
1	SATISFACTION	.349[a]	7.323	.000	.485	.437	2.291	.437
	PRICE	.205[a]	4.514	.000	.324	.564	1.772	.564
	INTENDTO COMPLETE	.068[a]	1.684	.094	.127	.788	1.269	.788
	INTENDTO RECOMMEND	.142[a]	3.312	.001	.244	.664	1.506	.664
	INTENDTO REENROLL	.108[a]	2.795	.006	.207	.836	1.197	.836
2	PRICE	.046[b]	.900	.369	.068	.384	2.606	.297
	INTENDTO COMPLETE	-.024[b]	-.627	.532	-.048	.696	1.437	.386
	INTENDTO RECOMMEND	-.009[b]	-.202	.840	-.015	.481	2.081	.316
	INTENDTO REENROLL	.034[b]	.950	.343	.072	.759	1.318	.396

a. Predictors in the Model: (Constant), SERVQUAL

b. Predictors in the Model: (Constant), SERVQUAL, SATISFACTION

c. Dependent Variable: ORS




Normal P-P Plot of Standardized Residual for Selected Cases
Dependent Variable: ORSscore
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0