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E-learning: Investigating students' acceptance of online learning in hospitality programs.

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**E-learning: Investigating students' acceptance of online learning
in hospitality programs**

by

Sung Mi Song

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Hospitality Management

Program of Study Committee:
Robert Bosselman, Major Professor
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Iowa State University

Ames, Iowa

2010

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ABSTRACT

Name: *Sung Mi Song*

Dissertation Title: *E-learning: Investigating students' acceptance of online learning in hospitality programs*

Major Professor: *Robert Bosselman, Ph. D.*

Higher education institutions, including hospitality programs, have been challenged by major changes in their various environments. Today's students grow up with the Internet and digital devices. Therefore, their behaviors differ from those of previous generations. As such, the challenges educational practitioners and designers face are to recognize these differences and to develop educational offerings appropriate for their learning patterns, characteristics, and behaviors.

Students' perceptions and satisfaction with online learning courses have drawn a lot of attention from educational practitioners and researchers. However, an empirical study of perception and satisfaction with online learning is yet to be found in the hospitality area. Thus, this study addresses gaps in previous studies.

This study was conducted with the participation of hospitality programs at six universities in the states of Iowa, Nevada, Virginia, Florida, and Texas. A web-based survey was developed to understand students' perceptions and satisfaction with online learning classes in hospitality. Perceived infrastructure quality (1PSQ) reflects students' experiences or perceived performance of the functional infrastructure. Perceived interaction quality (2PSQ) relates to students' experiences or perceived performance of student-instructor.

The major finding of the dominant power predicting student satisfaction with online courses is interaction-driven rather than information-and-system-driven quality. This should be a wakeup call for educational administrators or course management developers, who believe information quality or system quality is comparatively more important than interaction quality in driving students' satisfaction. This study also empirically confirmed the major propositions that Benbunan-Fich, Hiltz, and Harasim (2005) suggested on the Online Interaction Learning Theory in the context of hospitality.

CHAPTER I. INTRODUCTION

Information technology has permeated nearly every aspect of people's lives. Technology is changing the way people, firms, and institutions present, disseminate, and communicate their messages, creating a ubiquitous learning environment and an accelerating information society. In an information society, achieving a high level of acquisition and management of knowledge will be one of the key competitive advantages.

Against this backdrop, information technology has expanded the realms of education and has added new dimensions of quality to the ever-changing definition of education quality. Educators now have to give a second thought to the very nature of learning and also have to search for alternative learning and development solutions in consideration of the rapid progress of technologies. Teachers are encouraged to make greater use of these new technological developments. Students also face more flexible environments where self-initiated education is possible, enabling them to be engaged in learning throughout a lifetime. Reflecting these challenges and opportunities, a number of researchers have pointed to the potential of online courses to foster the current trend of pedagogies and learning environments especially designed according to constructivist principles (Harasim, 2000; Sigala, 2002). Literature states that constructivist learning environments facilitate the personal construction of knowledge about the external world. This process is facilitated by environments that represent realities through real-world, case-based contexts for learning and that facilitate collaborative construction of knowledge.

On the other hand, considerable concerns have also emerged, especially with regard to the quality of e-learning. Since online learning is self-directed learning that lacks physical interactions, arguments on how to enhance quality have focused on interaction quality. Several researchers (Anderson, 2003; Hiltz, 1994; Moore, 1989) have focused on interaction as the major dimension of quality of online learning. Moore (1989) suggested three types of interactivity that occur in the process of learning: (a) interaction with content (cognitive presence); (b) interaction with instructors (teaching presence); and (c) interaction with classmates (social presence). While Taylor (2001) saw the "Fourth generation" of online

technology as a way of increasing interaction and therefore increasing quality, Benbunan-Fich, Hiltz, and Harasim (2005) proposed a framework that consists of three building blocks of input-process-output with regard to the learning process toward the learning/teaching goals (i.e., effective learning, student learning, student satisfaction, cost effectiveness, etc.).

Despite the current need for and rising interest in enhancement of interaction quality in online learning within the hospitality discipline, studies on students' perceptions about interaction quality and outcomes are scarce. Having knowledge and information about the needs of students will be a starting point for the diagnosis of the current state of online learning in hospitality. As such, the purpose of this study is to examine the relationship among perceived interaction quality, usefulness, satisfaction, and e-loyalty, and to determine the role of interaction quality. In the pursuit of these goals, this study bases itself on the interaction online learning theory proposed by Benbunan-Fich et al. (2005).

Definition of e-learning

As shown in Figure 1, online learning forms a part of e-learning. Online learning, education that occurs only through the Web, belongs to the scope of e-learning. E-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance (Rosenberg, 2001). According to Khan (2001), e-learning encompasses Web-based learning (WBL), Internet-based training (IBT), advanced distributed learning (ADL), and online learning (OL). In a broader sense, Govindasamy (2002) referred to e-learning as instruction delivered via all electronic media such as the Internet, Intranets, extranets, and hypertext/hypermedia documents. According to Rosenberg (2001), the scope of e-learning also involves networks, higher education, K-12 schools, corporations, government agencies, nonprofit organizations, homes, and public space. In that respect, e-learning can be used by hospitality program educators to improve the efficiency and effectiveness of educational interventions in the face of social, scientific, and pedagogical challenges. With online learning as a type of e-learning, students generally can access online courses at any time and at any place they have Internet access. Various course

management systems that are utilized for online learning allow both synchronous and asynchronous communication between students and instructors.

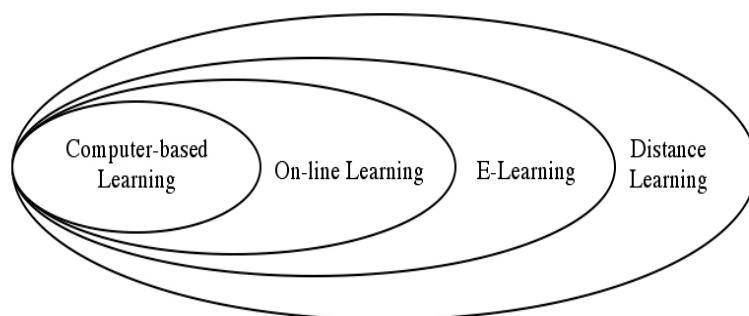


Figure 1. Scope of e-learning. Adapted from “W. R. Hambrecht—Corporate E-learning: Exploring a New Frontier” by K. Bachman, 2000. Retrieved on June 17, 2008 from <http://www.astd.org/NR/rdonlyres/E2CF5659-B67B-4D96-9D85-BFAC308D0E28/0/hambrecht.pdf>

Growth of e-learning

The global e-learning market is expected to surpass \$52.6 billion by 2010 (“E-learning market,” 2007). The U.S. e-learning market was estimated at about \$17.5 billion in 2007 (“E-learning market,” 2007). Most universities worldwide are now offering web-based learning via the introduction of learning management systems (LMS) that enable them to open their courses on-campus, off-campus, and even across borders (Raaij & Schepers, 2008; Sigala & Baum, 2003). Some universities are partnering with commercial sectors to develop high quality web-based courses, and other universities are engaged in becoming partners in inter-institutional schemes and pushing forward in the drive towards globalization. Allen and Seaman (2007) reported that more than 96% of institutions in the U. S. having over 15,000 students enrolled offer online courses. From 2002 to 2006, for one semester the number of online learners increased from 1.6 million to 3.48 million (see Figure 2). The same phenomenon has been occurring in the U.S. corporate training market where the number of online learners was estimated to be nearly 48.2 billion in 2009 (Lamoureux, 2010).

Corporations spent approximately \$1.2 billion on e-training and technology-based IT training increased more than 20% since 1999. It was expected to grow at an 83% annual rate (Gold, 2001; Zenger & Uehlein, 2001). The motivation of increasing e-training in a corporate sector has moved from cost reduction to employee productivity and operational efficiencies or streamlining corporate training. Government has also been supportive of education through technology. In 2001, the U.S. spent \$800 billion on education. Predicting the new age of e-learning, Bates (2005) noted that the new emerging organizations providing e-learning are classified into autonomous distance education institutions, proprietary universities, for-profit distance education institutions, partnerships and consortia, and dual mode institutions.

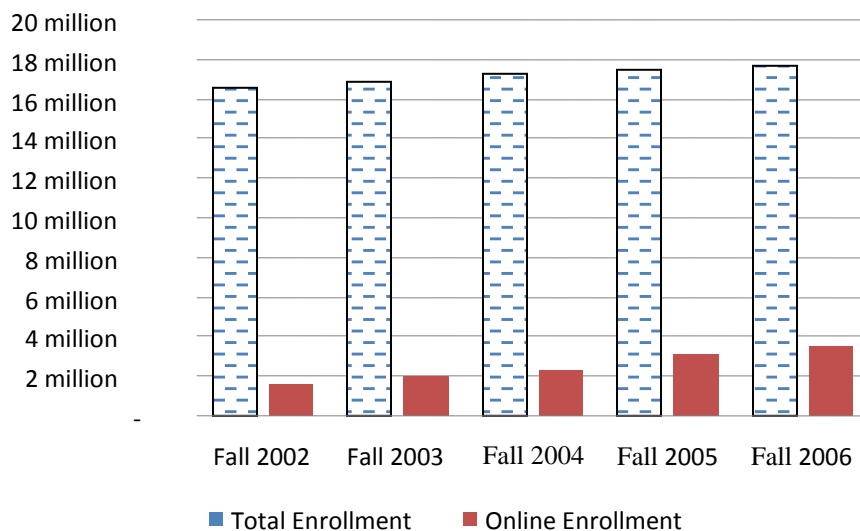


Figure 2. Online learning in Higher Education: Fall 2002–Fall 2006. Adapted from “Online Nation: Five Years of Growth in Online Learning” by I. E. Allen and J. Seaman, 2007, Needham, MA: The Sloan-C.

The trends in pedagogical stances and development of learning paradigms

E-learning has evolved constantly with the changes in the social environment and

educational paradigms (see Figure 3). These changes are also seen in the development of communication technology.

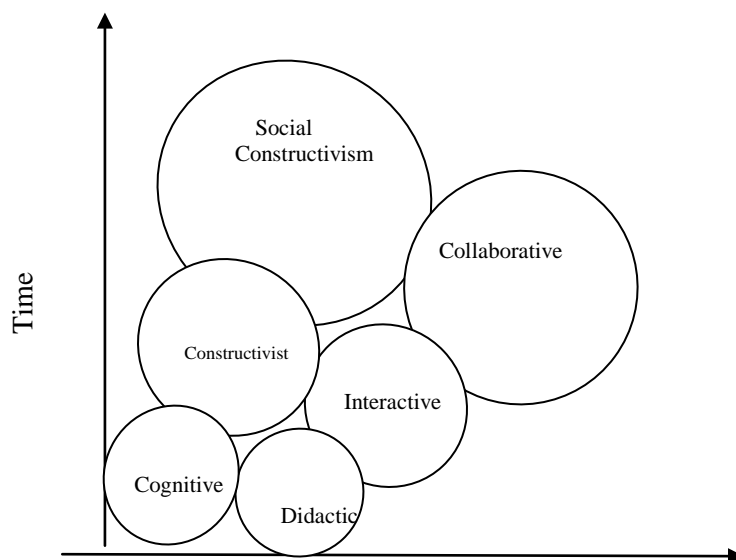


Figure 3. Trends in pedagogical stances and development of learning paradigms over time. Adapted from “A History of E-learning: Echoes of the Pioneers” by P. Nicholson, 2007. In B. Fernandez-Manjón, J. M. Sanchez-Perez, J. A. Gomez-Pulido, J. A. Gomez-Pulido, M. A. Vega-Rodriguez, & J. Bravo-Rodriguez (Eds.), *Computers and education: E-learning from theory to practice* (pp. 1–12). Dordrecht: Springer.

The pedagogical focus of learning environments is closely related to changes in the psychological foundations of learning. One of the clearest trends in all areas of educational and training applications has been the increased scale of adoption of constructivist paradigms (Palincsar, 1998). With regard to the nonschool sector, the constructivist trends are arguably based more on the notions of communities of practice and computer-supported collaborative work than on constructivist psychology focus in schools (Nicholson & McDougall, 2005). Currently, e-learning combines with existing social network software, offering services at a very low cost and allowing utilization of contents under the control of its users.

Different learning paradigms hold distinct perceptions of learning. Whereas behaviorism seeks to investigate which inputs produce certain outputs of the learning process, cognitivism focuses on why particular inputs produce certain outputs. Both

approaches appear to downplay the contexts in which learning occurs. This awareness has led to more contextualized approaches such as constructivist and constructionist approaches.

In the cognitive learning theory, observation is an important component in an individual's cognitive development (Bandura, 2001). The cognitive learning theory is also called the social learning theory in that social experiences shape an individual's cognitive processes and behaviors (Bandura). According to Bandura, environmental, behavioral, and personal factors contribute to an individual's ability to learn, each factor being intertwined with one another.

The constructivist theory focuses on "cognitive development and deep understanding" (Fosnot & Perry, 2005, p. 10). The constructivist approach argues that learning is an active process and emphasizes that learning involves the construction of meaning from experience and social interaction. Against this background, cognitive constructivism focuses on an individual's construction of meaning based on Piaget's theory of cognitive development, which relates to the building of schemas (Brainerd, 2003). These schemas enable an individual to assimilate new information with prior knowledge and to accommodate or change current belief systems (Cobb, 2005). Cognitive constructivism provides a guideline for course design and suggests the role of facilitators as assisting students in transferring and adapting what was learned to other situations.

Social constructivism further focuses on the interaction among learners reflecting Vygotsky's socio-cultural theory. Students share ideas while teachers facilitate and encourage the sharing of information (Maor, 2003). Each member of a group learns and constructs new ideas from this collaborative experience (Maor, 2003). For example, a student observes how another individual solves a particular problem (interpersonal interaction). This student then constructs his/her ideas (intrapersonal interaction) based on the observed interpersonal interaction. In a social constructivist learning environment, the facilitator interacts with learners, builds scaffolding for specific topics, and promotes student interaction and collaboration (Bird, 2007). The interactions create a rich learning environment that helps students feel connected, leading to greater satisfaction with the course (Bird, 2007). Both social and cognitive constructivism concentrate on how an individual constructs meaning through experiences (Rice & Wilson, 1999). While Vygotsky (a social

constructivist) puts emphasis on social and cultural interactions, Piaget (a cognitive constructivist) focuses on assimilation and accommodation (Rice & Wilson, 1999).

In an online environment, the learner's interactions and subsequent received responses promote an interconnected sense of being. The learner's environment and experiences create an emotional, social, and motivational component to learning, which increases the individual's satisfaction with the learning environment.

E-learning: Standing on the fourth generation of distance learning

Distance learning has become more technology-based. Today, distance learning often incorporates several forms of instructional media—print, audio, video, computers, collaborative systems, and the Web. The computer and the network have linked the teacher and the student through word processing, e-mail, collaboration, chat rooms and virtual environments. E-learning is said to be the fourth generation of distance education in the U.S. (Taylor, 2001) (see Table 1.1). Distance learning has evolved through four generations, and the development of the four generation models has been paralleled with trends in pedagogy and the development of learning paradigms. The first generation was the introduction of correspondence education in the 1800s, especially its use by land grant universities beginning in the latter part of the century to deliver agricultural education to farmers in rural areas. The second generation came with the introduction of television to deliver educational opportunities to all people in their homes. This stage expanded with the introduction of public broadcasting of tele-courses in the 1970s and 1980s, reaching its apex with the quality courses of the Annenberg/CPB Project in the 1980s and early 1990s. The third generation emerged in the late 1980s when colleges and universities sporadically began to offer online courses while the Internet was still largely funded by the U.S. government and was a “club” of university faculty and military personnel. This was an era of experimentation and searching for ways to use the reach of the Internet while still taking advantage of all that had been learned from the two preceding stages. At present, distance education in the U. S. is in its fourth generation with the introduction of a complete “virtual program” of study (Dirr, 1999).

Table 1.1.

Models of Distance Education—A Conceptual Framework

Generation & variable Associated Delivery Technology	Flexibility	Interactivity	Refined material	Institutional cost
FIRST GENERATION				
The Correspondence Model				
Print	+	--	+	--
SECOND GENERATION				
The Multi-media Model				
Print	+	--	+	--
Audiotape	+	--	+	--
Videotape	+	--	+	--
Computer-based learning (e.g. CML/CAL/IMM)	+	+	+	--
Interactive video (disk and tape)	+	+	+	--
THIRD GENERATION				
The Telelearning Model				
Audio tele-conferencing	--	+	--	--
Video-conferencing	--	+	--	--
Audiographic Communication	--	+	+	--
Broadcast TV/Radio and Audio teleconferencing	--	+	+	--
FOURTH GENERATION				
The Flexible Learning Model				
Interactive multimedia (IMM) online	+	+	+	+
Internet-based access to	+	+	+	+
Computer-mediated WWW resources communication	+	+	+	+
FIFTH GENERATION				
The Intelligent Flexible Learning Model				
Interactive multimedia (IMM) online	+	+	+	+
Internet-based access to WWW resources	+	+	+	+
Computer-mediated communication, using automated response systems	+	+	+	+
Campus portal access to institutional processes and resources	+	+	+	+

Note. From "Higher Education Series: Fifth Generation Distance Education," by J. Taylor, 2001, Department of Education, Training and Youth Affairs, 2008, Australia. Retrieved on June 7, 2008, from <http://www.dest.gov.au/archive/highered/hes/hes40/hes40.pdf>

Advantages of e-learning

E-learning provides various benefits. Some of the benefits that are found in literature include advantages of convenience, time and place flexibility, avoiding the commute to campus, a wide variety of course selections, lifelong learning, social equity and access, more advanced information, financial benefits, and multimedia-rich contents (Bates, 2005; Rosenberg, 2001).

Studies have shown that online learning can be as effective as traditional face-to-face classroom learning for students' achievement (Johnson, Aragon, Shaik, & Palma-Rivas, 2000; Neuhauser, 2002; Russell, 1999). E-learning technologies can facilitate student-centered learning and also help create a collaborative learning environment. Student-centered e-learning allows students to be actively involved in the learning process and to determine the pace of their own learning. Sigala (2002) states that benefits of student-centered learning significantly increase when collaborative and constructivist theories are applied, especially in combination with the exploitation of internet tools. Based on this approach to e-learning as an inherently diverse, collaborative, and social process, previous researchers have suggested the benefits of e-learning as follows:

- Active and constructive learning, deep processing of information, improved individual achievement (Abrami & Bures, 1996).
- Increased store of knowledge, improved communication and listening skills (Cho, Schmelzer, & McMahon, 2002).
- Development of social attitudes and a collaborative spirit, motivation to learn, critical thinking, diversity of ideas, and long-term retention of students (Flynn, 1992).

Disadvantages of e-learning

Despite the rapid increase in popularity and development of e-learning, especially Web-based learning programs, several critics of e-learning have expressed concerns about the integrity and effectiveness of online learning. These concerns include the lack of face-to-face interpersonal communication, the isolated environment, and questions about the appropriateness of the presented course contents (Carnevale, 2001; Wallace, 2000). It has been suggested that the traditional model of instructional design may no longer be appropriate for teaching with new technologies (Pelz, 2004).

The subject of interactivity has generated controversy among educators who question the quality of online courses. Reisetter, LaPointe, and Korcuska (2007) found online learners described the lack of interaction as one of the unique challenges. Critics argue that replicating the classroom learning environment on the internet is difficult in terms of media richness and social presence. They identify problems of plain text-based media and the elimination of nonverbal communications. Proponents, on the other hand, state that interactivity in online learning is just as good as, or even better than, that in the traditional classroom (Weigel, 2002). They suggest that multimedia technologies can provide multisensory experiences to enhance learning. For example, Moore (1989) argued that the text-based online course experience could be supplemented with useful yet inexpensive traditional print media and new media forms such as videoconferencing, voice messaging, video clips, and/or multimedia.

In the flexibility of the e-learning environment, students may also find it more difficult to motivate themselves to commit time to their studies. Instructions mediated by a computer can engender distraction and alienation if the student loses motivation in the solitary confines of a remote home computer. Therefore, the success of online courses may depend on students' motivation and perceptions toward online courses. As a case in point, doctoral students who were highly motivated and took online courses perceived that the online program offerings were congruent with their own goals (Linder, Dooley, & Murphy, 2001).

E-learning in hospitality

Technology has become a major driving force in educational institutions as well as in the hospitality business. The convergence of technological applications places knowledge and information at the core of the competitive profile of tomorrow's hospitality enterprises (Olsen & Connolly, 1999). Since the early 1980s, many researchers (Andrew, 1984; Borsenik, 1993; Prokopenko, 1987; Sandler & Porta, 1983;) in the hospitality industry have raised issues and concerns regarding the use of technology, reflecting upon its role in education. Mann (1993) asked the question of what the hospitality classrooms of the twenty-first century might look like. More recently, Sigala and Baum (2003) summarized several challenges that tourism and hospitality education face as: (a) increasing global competition due to the rise of multiple new institutions (e.g., corporate university, for-profit university, and virtual university), and (b) changes in the student market. Supporting Sigala and Baum's notions, Becket and Brookes (2008) stated that higher education institutions including hospitality programs have faced a growing climate of increased accountability for providing quality service as an organization serving the public. The greater expectations and diversity of students as consumers, their demand for increased flexibility in provision, and increasing levels of competition within and across national borders are all attributable to increasing emphasis on quality. Becket and Brookes further stated that in the national context, the role of higher education in stimulating national economic growth as well as the value of international students to national economies increase the need to ensure quality within higher education institutions.

With the advent of this ubiquitous learning environment, educational practitioners in hospitality programs are cognizant of the increasing need to adopt close partnerships with other institutions both within and without nations in providing certificates and degrees as well as in the training and professional development of employees. For more than 10 years, hospitality and tourism departments have entered the global online educational market to share their resources with other educational institutions and industry leaders located in different countries. Hospitality programs increasingly provide fully online programs for

Master and Ph.D. degrees in addition to providing online courses as alternatives to traditional classes.

In the hospitality discipline, several researchers examined the benefits of e-learning with regard to employment including successful employee indoctrination and increased teamwork and communication. Sigala and Baum (2003) stated that e-learning creates flexible training opportunities for those seeking hospitality employment and allows potential employees to learn at their leisure and without physical restrictions, resulting in a greater pool of applicants and easier transition into the company. Cho et al. (2002) further stated that e-learning provides competent employees who can adjust to different strategies and business models without major hitches, which leads to lower turnover and higher retention for employers. Allowing students to control how and when they learn is beneficial to the hospitality industry, which is labor-intensive and depends on good employees and consistent service quality for success. This suggests a high cost for training. Cho et al. proposed an instructional model that incorporated computer technology and internet use into hospitality management courses. The instructional model was based on the concept of just-in-time (JIT) education and constructivist learning theory as well as learner's attitudinal behavior toward technology.

Several researchers, on the other hand, were interested in whether e-learning is an effective learning method for students in hospitality. McDowall and Lin's (2007) study implied that students in hospitality management may prefer traditional in-class teaching. Using a self-reported survey, McDowall and Lin (2007) compared the attitudes of students with respect to two different teaching methods (traditional versus video-conferencing). The population for this study was all students enrolled in Tourism and Hospitality Management classes during fall 2002, spring 2003, and fall 2005 at two state universities in South Dakota. Out of 74 respondents in the study, 89% preferred a traditional in-class setting. Students who preferred traditional teaching methods strongly agreed that the presence of the instructor made them feel more comfortable and enhanced their learning. On the other hand, students who preferred video-conferencing slightly indicated that the ability of the teacher to explain the subject matter was more important to them than the presence of the teacher. They thought that the presence of the teacher would not impact their grade or the quality of

teaching and learning. The study also reported nonrandom sampling as the limitation of the study.

Another recent study assessed the effectiveness of ServSafe online. Feinstein, Dalbor, and McManus (2007) conducted a survey to determine whether taking an internet-based version of a traditional lecture-based food safety and sanitation training course would result in a significant increase in learners' food safety and sanitation knowledge. Foodservice workers from the Indiana Health Department, the University of Minnesota Extension Service, and students in the William F. Harrah College of Hotel Administration participated in this study. The results showed a significant difference in ServSafe exam scores between a pre-test and a post-test.

Similarly, Cobanoglu (2006) found that the use of blogs by hospitality management students allowed them to learn better by taking in information and expressing their feelings and thoughts on it to the rest of their community. These ideas of expression and feedback are central to keeping the hospitality industry running successfully as they allow hospitality employees to understand valuable information such as travelers' perception of the hotel, negative comments by guests, as well as responses to marketing options. Coupled with Web-based learning, the Internet is a multi-dimensional technology tool used in a manner similar to that of traditional media. Specifically, conversation features of the Internet align with mediated interpersonal technologies where the Internet's information-retrieval and information-giving features are used in ways similar to the mass media channels of television, newspapers, and books.

Recent hospitality literature has featured a number of studies measuring the effectiveness of simulation cases (Corsun, Inman, & Muller, 1995; Feinstein & Mann, 1998; Ferreira, 1992, 1997; Kendall & Harrington, 2003; Martin & McEvoy, 2000; Shumate & Partlow, 2000; Toomey, Priestly, Norman & O'Mahony, 1998). Kendall and Harrington examined the effectiveness and efficiency of computer simulations for education in hospitality strategic management. Results of the empirical study showed significant advantages in using simulation cases in hospitality strategic management courses.

Purpose of the Study

The purpose of this study is twofold: (a) to identify key determinants of the behavioral intention (BI) of students in the context of online learning in hospitality programs, and (b) to examine the contributory factors to students' perceived quality of and satisfaction with online courses. Finding determinants of behavioral intention towards online learning as well as those of satisfaction with online learning provided by hospitality programs can help education administrators achieve educational goals by responding to students' needs. It also helps improve current hospitality online course programs, coupled with the reassessment of the resources and learning technologies upon which higher education institutions have relied. The five questions this study explores are:

1. What are the relationships among perceived quality, perceived usefulness, satisfaction, and loyalty?
2. What are the determinants of loyalty of online learners in the hospitality program?
3. What are the determinants of satisfaction with online learning in the hospitality program?
4. What is the role of interaction in the learning process?
5. What personal attributes influence satisfaction?

Justification of the Study

Although e-learning is relatively new, several theories have been proposed as to the effectiveness of online learning. Johnson et al. (2000) and Russell (2001) found no significant differences in student satisfaction measured as a performance index of e-learning. On the other hand, after reviewing 47 online course evaluation reports published between 1996 and 2002, Olson and Wisher (2002) suggested that online instruction “appears to be an improvement over conventional classroom instruction” (p. 11).

Critics have questioned the value, effectiveness, and quality of online education. Unlike instructors of traditional courses, instructors of online courses do not always receive physical cues or verbal feedback from students about course content and the instruction

process. Adding to this disadvantage of e-learning, some studies show that students are more satisfied with face-to-face courses than with online learning. In the same vein, Levy (2007) found several studies reporting that the attrition rate is comparatively high in online learning. Levy's report is noteworthy in that dropout students (non-completers) were reported to have had significantly lower satisfaction with e-learning than students who successfully completed (completers or persistent students) the same e-learning courses. In an empirical study of the hospitality discipline, McDowall and Lin (2007) found that students from a hospitality program preferred traditional learning to online learning.

Identifying expectations of students or their perceptions of the new learning environment can provide not only instructors but also education administrators with valuable feedback. Especially, it can enhance students' learning experiences and thus prevent their dropout. Young and Norgard (2006) contend that being aware of students' perceptions of online course delivery will help faculty tailor courses to meet the needs of the typical student. As such, finding out hospitality students' views of e-learning can serve as an effective tool for enhancing quality of e-learning (*i.e.*, enhancing employability for maximum interaction). As more and more higher education institutions offer online learning courses, it becomes increasingly important that research examines the satisfaction of students and their behavioral intentions concerning online learning. While a number of studies discuss online learning in hospitality education, few empirical studies have been conducted on determining factors of students' behavioral intention towards online learning and their satisfaction with the experience, which this study seeks to explore.

Significance of the Study

Higher education institutions increasingly adopt e-learning both as an alternative channel to traditional classroom learning for existing students and as a way to expand their reach to new students. Adopting e-learning and its technology requires large investments in terms of faculty, time, money, and space that need to be justifiable to administrators and others in educational leadership.

A recent study that employed time series econometric methods suggested that customer retention and quality have a stable positive link binding them together (Onyeaso & Adalikwu, 2008). The study further suggested that customers' memories of quality and satisfaction linger on beyond the current period to positively impact customer retention levels in the future. Customer retention provides repeat purchase patronage as the foundation of superior competitive advantage.

In the context of online learning, students' perceived service quality and satisfaction is likely to lead to word-of-mouth, which in turn is likely to affect the image or reputation of an institution. It is well established in the literature (Arora & Stoner, 1996) that, in services, name familiarity, word-of-mouth, and reputation of the service institution are strong factors having impact on customer loyalty and retention. Thus, a university needs to manage service quality and satisfaction of its students. In order to do that, it is critical to know what factors are connected with satisfaction and service quality, and how students become satisfied.

Limitations of the Study

This study has the following limitations:

1. The sample is limited to students who chose to complete the survey.
2. The population of this study is limited to students enrolled in hospitality programs offering online courses.

This study is based on several assumptions:

1. The respondents answered all survey questions honestly and to the best of their ability.
2. The questionnaire provides the attributes needed to determine students' behavioral intention towards, perception of, and their satisfaction with, the online learning courses.

Definition of Terms

The following definitions are provided to ensure understanding of these terms in a consistent manner throughout the study.

Online learning: an education that occurs only through the Web. It does not consist of any physical learning materials issued to students or actual face-to-face contact. Pure online learning is essentially the use of e-learning tools in a distance education mode using the Web as the sole medium for all student learning and contacts. For this study, however, online learning is defined by course work that has at least 80% of the contents and interactivities online (Allen & Seaman, 2005, p. 4).

Quality: ISO 9000 as quoted by Paulsson and Naeve (n.d) states that *not all qualities are equal. Some are more important than others. “The most important qualities are the ones that customers want. These are the qualities that products and services must have”* (Paulsson, & Naeve, n.d.)

Electronic service quality: *“the consumer’s overall evaluation and judgment of the excellence and quality of e-service offerings in the virtual marketplace... Customers...rather they are likely to perceive the service as an overall process and outcome”* (Santos, 2003, pp. 235).

Learning Management System (LMS): the internet-based software that facilitates the delivery and tracking of e-learning across an institution. A learning management system can serve several functions beyond delivering e-learning contents. It can simplify and automate administrative and supervisory tasks, track learners’ achievement of competencies, and operate as a repository for instructional resources twenty-four hours a day.

Students’ satisfaction: the summary psychological state resulting when the emotion surrounding disconfirmed expectation is coupled with a consumer’s prior feelings about the consumer experience (Oliver, 1980).

Pedagogy: traditionally refers to teacher-oriented instruction, but it is now increasingly used to describe the application of sound education practices (Nichols, 2003).

CHAPTER II. LITERATURE REVIEW

This chapter provides a synthesis of the theoretical and empirical literature used in the development of the relationship model and hypotheses for this study. Relevant models, such as Information System Success Model and Online Interaction Learning Theory Model, are reviewed in the first section as a sound groundwork for the study, and the review focuses on quality dimensions of online learning. The second section describes key variables comprising the relationship model. The last section describes the proposed relationship model along with the research hypotheses.

Theoretical Frameworks of the Learning Process and Quality of Online Learning

The concept of service quality is very much related to the nature of process. So, in the examination of the quality of the online learning course in hospitality, it is necessary to understand theories and models pertaining to students' learning process. Therefore, the study introduces 3P Model, the Online Interaction Learning Theory, and the Interaction Equivalency Theorem. Furthermore, since the online learning is computer-mediated education that utilizes the Information Communication Technology, it is also necessary to explore the theoretical foundation and conceptualization of e-learning systems quality in previous IS success studies. As such, the researcher introduces the Information System Successful Model. The following section briefly presents these frameworks that are relevant to the quality of the online learning process and outcome.

DeLone and McLean Model of Information System Success

Theories addressing the issue of accepting the information technology focus on consumers' evaluation of the system. A model proposed by DeLone and McLean (2003) has popularly been adopted as a frame to assess the success of an information system and has been updated and validated by a number of studies. As an updated version, DeLone and

McLean (2003) Model (henceforth, D & M) consists of six components: system quality, information quality, service quality, use, user satisfaction, and net benefits. System quality, information quality, and service quality predict both use and user satisfaction. Use and user satisfaction are antecedents of impact.

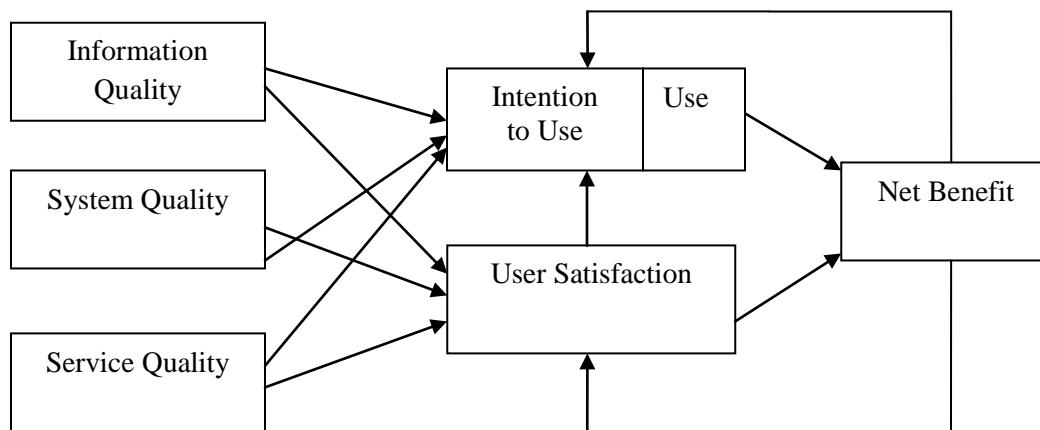


Figure 4. DeLone and McLean model of information system success. From “The DeLone and McLean Model of Information Systems Success: A ten-year update,” by W. H. DeLone and E. R. McLean, 2003, pp. 9-30.

System quality deals with the issues such as usability, availability, reliability, adaptability, and response time (e.g., download time). These characteristics are assumed to be valued by users of a system. Information quality captures the content issues that are geared toward providing users with personalized, complete, relevant, easy-to-understand, and secure information. It was assumed that prospective users expect these information qualities in e-business systems. Service quality refers to the overall support delivered by the service provider. Use measures any visit to a website. It includes navigation within the site, information retrieval, and execution of a transaction. User satisfaction deals with the

customer experience cycle from information retrieval to purchase. Net benefits capture the balance of positive and negative impacts of the system.

The contribution of the model lies in helping understand the IS success by providing a format for categorizing a number of measures. The model has just three components: the development of a system, the use of the system, and the consequences of this system use. The constructs in the model are interrelated rather than independent. However, it also suggests causal interdependencies between the categories. Seddon and Kiew (1994) tested the model by replacing Use with Usefulness and adding a new variable called User Involvement. The result partially supported DeLone and McLean's Model (1992).

Several researchers have adopted the D & M IS success model as a theoretical foundation for assessing the quality of e-learning system and services both in the perspective of customers and in an organizational context (Chiu et al. 2005; Roca et al, 2006; Wang, Wang, & Shee, 2007). The majority of these studies used the three dimensions of IS quality as independent variables and satisfaction as a dependent variable in order to assess students' perception of satisfaction with e-learning system/service.

3P Model for teaching and learning

The 3P model (see Figure 5) proposed by Biggs (1999) is a model that explains why students learn differently and how students' approach to teaching is related with quality of learning and outcome. The model integrates teaching-based, student-based, and process-based approaches to learning. According to 3P (presage-process-product) model, learning is seen as a progression from presage (learning context) through process (learning acts) to products (learning achievement).

Presage factors exist prior to actual engagement in learning and comprise both teaching and student presage factors. These two sets of presage factors interact. Student presage factors measure the learning-related characteristics such as abilities, prior knowledge, motivation, personality, learning styles, and stabilized learning approaches. Teaching presage factors focus on teacher behavior and the role of the learning environment.

Examples are the course structure, curriculum content, method of teaching and assessment, and classroom climate.

Process variables include the actual activities that take place in the classroom. The process part of the model starts with the interaction of student characteristics and learning environment. This interaction determines students' perceptions, and the perceptions drive the strategies selected for handling the task. The last construct, product, in the model describes the outcomes achieved in the learning process. Figure 5 presents the 3P model.

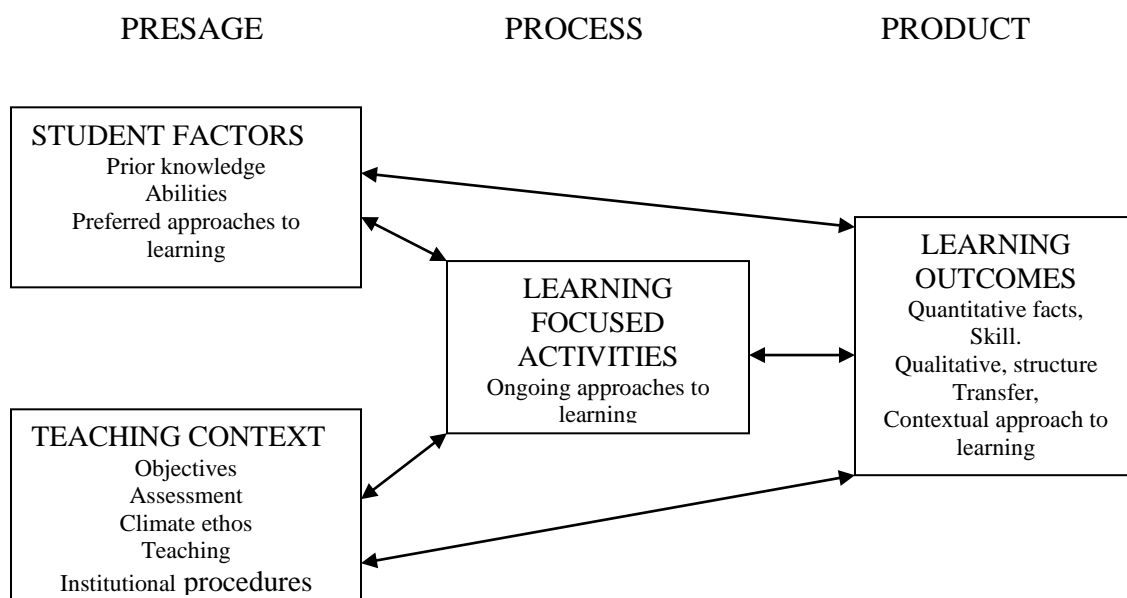


Figure 5. 3P Model for teaching and learning. From “ the revised two-factor study process questionnaire: R-SPQ-2F,” by J. B. Biggs, D. Kember, and D. Y. P. Leung, p. 136.

According to the 3P model, which has been supported by a number of studies, students differentiate their approaches to learning depending on their perception of the teaching. Prosser and Trigwell (2006) state that student-focused conceptual change approaches to teaching are related to deep approaches to learning, while teacher-focused

information transmission approaches to teaching are related to surface approaches to learning. Research suggests that higher quality learning outcomes are associated with deep approaches to learning. In turn, deep approaches to study are associated with perceptions that the teaching is good, that the goals and standards are clear, and that there is some independence in how and what students learn. Students' previous positive or negative experiences of teaching and learning also have a great impact on the students' perceptions of the learning context, and those perceptions are, in turn, related to their approaches to study. As such, this model does not describe a causal process, but an interacting system.

Online Interaction Learning Theory

The online interaction learning theory proposed by Benbunan-Fich, et al. (2005) employs a model that explains the learning process and outcome in the environment of online learning whereas the 3P model more generally applies to both classroom and online learning. Figure 6 presents the dynamic model of online interaction learning theory.

Benbunan-Fich, et al. (2005), not unlike Biggs (1979), sought for the understanding of the learning process in the context of inputs, learning process, and outputs. The researchers posit that while inputs produce outputs, the types or levels of interaction in the learning process have influence on the effect of inputs on outputs, i.e, the learning process exercises a mediating role between inputs and outputs. Thus, Benbunan-Fich, et al. (2005) model focused on the role of interaction elements at the stage of learning process in order to predict outputs of learning, while Biggs' (1979) model focused on students' approaches to teaching in the learning process in the prediction of outputs of learning.

Inputs, the first building block of the model, consist of characteristics of four factors: technology, student, instructor, and course. These four factors are expected to function as moderator variables and to influence how the learning technology is adapted for particular course . It is suggested that unless minimal levels of "input" variables are reached, a course will not be conducted in such a way as to lead to online interaction and communication that are necessary for the outcomes to be favorable. For example, if the Learning Management System (LMS) such as WebCT or Blackboard is not easy to use or requires high cost for

students to install certain software, then the barriers to a successful online course are overwhelming. If an online learning instructor has no training or no experience on how to design and teach a course online, then he/she is not likely to be able to use online class effectively. Finally, unless the student has at least the minimal required level of motivation and confidence to do the required activities, he or she will fail to reach a satisfactory level of learning.

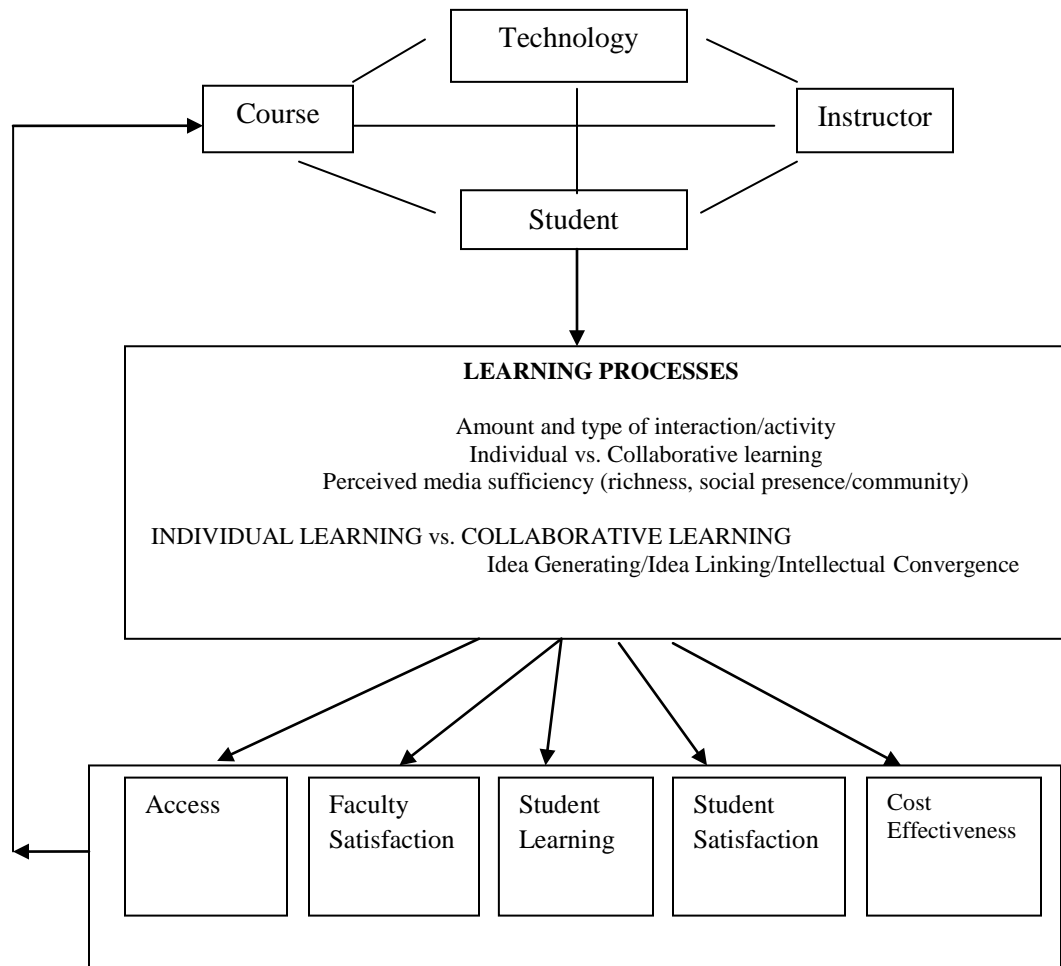


Figure 6. Dynamic model of online interaction learning theory. From "The online interaction learning model: An integrated theoretical framework for learning networks (pp. 34), by R. Benbunan-Fich, S. R. Hiltz, and L. Harasim, In S. R. Hiltz and R. G. Goldman (Eds.), Learning together online, 2005, Mahwah, New Jersey: Lawrence Erlbaum Associates.

Learning processes, the second building block of the model, introduce mediator variables (see Figure 6.). They characterize the mode of adaptation or use of the technology. According to Moore (1989), three main types of interaction may occur in online course: learner-content, learner-instructor, and learner-learner (p.1). Learner-content interaction is the learner interaction with content that results in “changes in the learner’s understanding, the learner’s perspective, or the cognitive structure of the learner’s mind” (p.2). Learner-instructor interaction is the learner interaction with an expert of the subject matter to gain support, including motivation, self direction, presentation of information, and evaluation (p.4). Learner-learner interaction is the learner interaction with his/her peers in the same learning process. Benbunan-Fich, et al. (2005) state that these types of interactions are related to the extent to which collaborative learning pedagogy is used. In this regard, researchers have come to focus on how collaborative learning contributes to educational effectiveness. Conversation, argument, and multiple perspectives that arise in groups contribute to such cognitive processes as verbalization, cognitive restructuring, and conflict resolution. Students also can get rid of uncertainty upon complex activities and increase engagement as a result of peer interaction. It is noteworthy that Bruffee (1999) pointed out learning as a consensual process. In an earlier time, Harasim (1990) took note of collaboration, which is likely to be designed in web-based discourse environment, as a key process in conceptual change and intellectual convergence.

Outcomes, the third and last building block of the model, provide dependent variables. The five outcome qualities that were identified on the Online Interaction Learning Model are: Access; Family Satisfaction; Student Learning; Student Satisfaction; and Cost Effectiveness. These desired qualities are also used as the synonym of the effectiveness of online learning.

Since this study incorporates the “inputs” of the online interaction learning model (see Figure 6) into the model proposed in this study, it is worthwhile to take a closer look at the variables constituting the inputs stated above.

Technology characteristics The model describes technology characteristics in terms of two perspectives: technical and communication. In the technical view, technology characteristics refer to the capability of the system such as quality, reliability, and functionality. In communication perspectives, technology characteristics refer to two modes- synchronous/asynchronous and proximate/distributed - reflecting respectively the time dispersion and the geographical dispersion. From communication perspectives, interaction can occur in real time (synchronous) or at different times/anytime (asynchronous). Members can meet in the same place (proximate) or in different places (distributed). Synchronous teaching has the benefit of spontaneity and immediacy while asynchronous technologies allow more control and flexibility to the learner. Learners can go back and forth over materials as many times as they wish. An on-line, text-based discussion forum is an asynchronous technology since learners can contribute to the discussions at their pace. Technologies based on characteristics of communication and interaction are as follows:

- Synchronous technology: radio, broadcast TV, cable TV, satellite TV, web-casting, powerpoint, telephone tutoring, audio conferencing, video-conferencing, web-conferencing, chat.
- Asynchronous technology: audio cassettes, video cassettes, websites, CAL, web streaming, DVDs, CD-ROM, pdf files, databases, e-mail, online discussion forums.

Instructor characteristics Instructor characteristics refer to skills, effort, and pedagogical technique used by an instructor. Instructor's pedagogy and behavior is the key to determining the nature of the educational processes and outcomes. Effective applications of an online learning course are those that match the pedagogical design (instructivist vs. constructivist/collaborative) driving the course. Pedagogy emphasizing the one-way transmission of concepts calls for the use of a system that improves the efficiency of this transfer in the lecturing process. In contrast, constructivist models call for learner-centered applications in which students can construct their own knowledge by formulating ideas into words and building on these ideas through discussions, reactions, and responses of their peers. For constructivist methods based on collaborative group assignments, the

technological platform should support communications among students (Benbunan-Fich, et al., 2005). Some studies suggest that it is the instructor's role in the course interaction that is most critical (Arbaugh, 2001, Boyd, 2008; Fredericksen et al., 2000). The researcher in these studies emphasized on instructors' attitude, instructional immediacy, and active participation. On the other hand, others suggest that students' role in interaction most significantly predicts student learning and/or satisfaction (Biggs, 1979; Arbaugh, 2000b; Borthick & Jones, 2000; Smith, Ferguson & Caris, 2001).

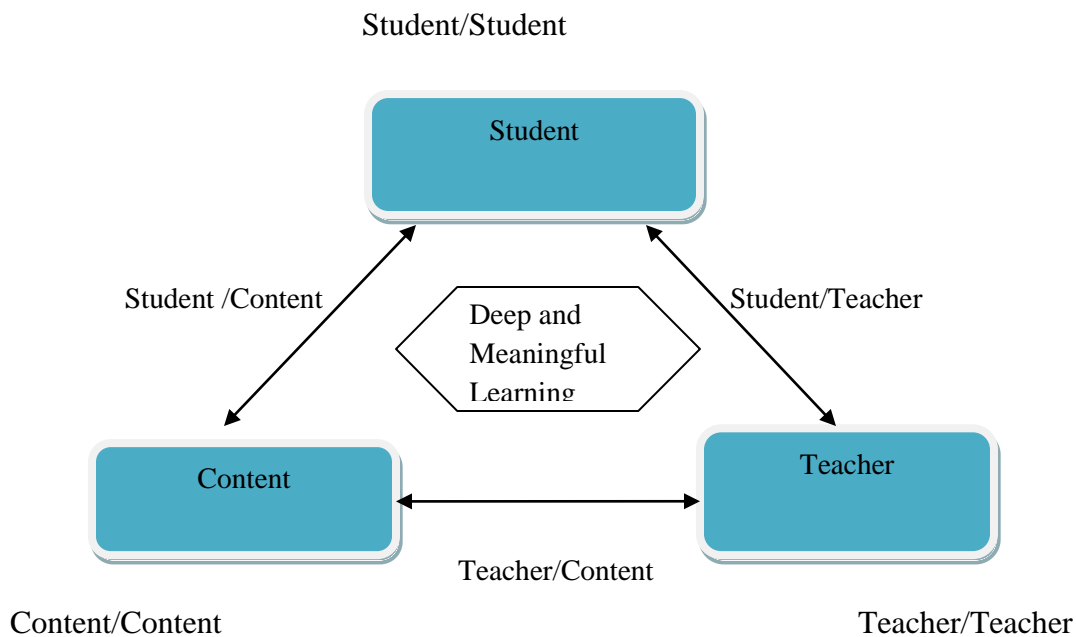
Student characteristics Many psychologists and educators have ascribed students' success and failure to individual difference, and have focused on the examination of the variables. These variables include ability, self-concept or self-confidence, learning motivation, instructional approaches, cognitive styles, learning styles, home environment, and accuracy of perceived ability, gender, and ethnicity. Similar to the 3P model proposed by Biggs (1999), in the Model of Online Interaction Learning Theory, student characteristics refer to motivation, ability, skill/knowledge, demographic factors, and learning styles. Thus, student attributes include learners' motivations for and capability of taking responsibility for their learning, and all student attributes that learners bring to a specific learning context (e.g., intrinsic motivation and resourcefulness), including prior experiences with the learning context.

Course characteristics Course characteristics include course type and design, class size, type of subject, and institutional context. Overall, the teaching institution has a dominant contextual influence on learning, determining e-learning policies, infrastructure, systems, and procedures that have direct impact on student support (Benson & Samarawickrema, 2009).

Interaction Equivalency Theorem

Anderson (2003) proposed the Interaction Equivalency Theorem. According to the interaction theory typology, deep and meaningful formal learning is supported as long as one of the three forms of interaction (student-teacher; student-student; student-content) is at a high level. The other two may be offered at minimal levels or even eliminated without

degrading the educational experience. High levels of more than one of these three modes also provide a more satisfying educational experience, although these experiences may not be as time-and-cost-effective as less interactive learning sequences.



*Figure 7. The interaction theory typology. Adapted from “Learning in a networked world: New roles and responsibilities,” (p. 43) by T. Anderson and D. R. Garrison, In C. Gibson (Ed.), *Distance Learners in Higher Education*, 1998. Madison, WI: At wood Publishing.*

The Interaction Equivalency Theorem was based on Moore’s interaction model. However, it allows us to see teaching and learning from the entire distance education perspective rather than from student’s perspective (Moore, 1989). Thus, the theory helps educators understand the importance of cost and sustainability as well as pedagogical value in choosing appropriate mixes of interaction. In this way, it assists educational practitioners in selecting

the most effective and efficient type of interaction. Figure 7 presents the interaction theory typology with three components suggested by Moore (1989) as well as the three new interactions proposed by Anderson and Garrison (1998).

The models presented above provide insights into the quality analysis of online learning course. They are common in several ways. First, these models suggest similar quality dimensions in online learning such as content, system, and human factors (i.e., student's characteristics and instructors' characteristics). Second, the models focus on describing process toward outcomes. For example, DeLone and McLean's (1992) Information System Successful Model was developed based on three processes of understanding IS and its impact.

Similar to other three learning theories, the three quality dimensions of D&M model influence user's satisfaction and, in turn, have impact on individual users and organizations. In the three learning theories, the contextual quality variables that are comparable to D&M's quality dimensions have impacts on learning outcome depending on the learning process. In all the three learning models, learning process was highlighted, playing a crucially important role in deciding the quality of learning and students' satisfaction; learning process involves the issues such as students' learning approaches to teaching and their perceptions of levels/types of interaction and collaboration, media richness, and social presence as key measurement of learning process. There are also differences among the models. First, the D&M is a causal model, while others are close to interaction model. For example, the learning and/or satisfaction outcomes produce feedback loops over time that result in changes to the variables in presage or inputs which include the nature of the higher educational organizations themselves. Second, in the D&M model, the evaluation is mainly from technical perspectives. On the other hand, the other learning models rather come from educational views which depict the perspectives of social and educational psychologies. Therefore, the IS model and learning models complement each other as foundations for measuring quality of e-learning.

Perceived Service Quality (PSQ)

A number of researchers agree that managing quality in higher education is a challenging task; because in higher education, quality has different meanings for different stakeholders and educational product has complicated nature. It is widely accepted that education has been viewed as a system that consists of inputs, transformation process and outputs. Sahney, as Becket and Brookes (2008) quoted, stated that there are human, physical, and financial resource inputs that undergo processes including teaching, learning, research, and knowledge transformation (Becket & Brookes, 2008).

Exploring online learning service quality

The importance of measuring and monitoring quality in any organization has been recognized by industry and academics . Service quality is a key determinant in differentiating service offers and building competitive advantage (Santos, 2003). Even though there is no consensus on the concept of service quality and it changes along in business as well as in educational institutions, defining and managing quality is necessary in order to reach certain goals.

While some researchers are of the view that perceived quality is a total judgment or evaluation with respect to a product or a service (Rust & Oliver, 1994; Taylor & Baker, 1994), other researchers contributed to classifying quality into different kinds. Gronroos (1984) classified service quality into functional and technical. Functional service quality focuses on evaluating the process of service, while technical quality refers to evaluating the actual output of the service. According to this definition, in education, the functional quality of learning deals with the effective teaching or learning process, which involves instructor's expertise and skill, understanding of students' needs, offering a good learning environment, feedback, access and communication. On the other hand, technical service quality in the e-learning refers to meeting the criteria parameters such as usability, functionality, interface of learning system, availability, content or documentation (Saxena, n.a).

ISO 9000 (1997) states that all qualities are not equal. Some are more important than others and others are less important than others. Thus, the most important qualities are the

ones that customers need and these are the qualities that products and services must have. Chua and Dyson (n.a.) introduced the ISO 9126 Quality Model as a basis for evaluating an e-learning system (Blackboard). Adopting a case study approach, the researcher applied the ISO 9126 Model to the e-learning system used by undergraduate students. The researcher found that ISO model alone was not sufficient because it was a general software quality model and thus did not specify the particular teaching and learning activities. The researcher discussed that a checklist of tools and attributes which promote good educational outcomes and efficient course management would be needed.

Broderick and Vachirapornpuk (2002) suggests that expectations are only one influencer in the judgment of service quality, and that other influencers, such as the image and reputation of the service organization, aspects of the service setting, the actual service encounter, and customer participation, may also be significant. Putting the emphasis on users and their perceptions of websites, Barnes and Vidgen (2002) reported on the development of WebQual 4.0 that captures key characteristics of web site quality from the user's perspective. The 22 items measure three dimensions of web quality: information, usability, and service interaction. Information quality was from IS research; usability from human-computer interaction; and service interaction quality was from marketing. The instrument exhibits psychometric properties and provides a comprehensive measure of web quality.

Researchers (Jurczyk, Benson, & Savery, 2005; Scanlan, 2003) have used seven categories of Institute of Higher Education Policy (IHEP) standards which have been a benchmark of best practices for distance learning within higher education environments. The seven categories are institutional support, course development, teaching and learning process, course structure, student support, faculty support, and evaluation and assessment. The standards address issues relevant to the learning process in online distance learning. The IHEP standards were developed on the basis of literature review and interviews conducted with 147 individuals including faculty members, students, and administrators at six leading accredited institutions in distance education. For example, Jurczyk et al. (2005) developed a 22-item student survey using three IHEP benchmarks, i.e., the teaching and learning process, course structure, and student support, which are directly related to student learning. The questionnaire was applied to measure students' attitudes before, during, and after a graduate

research methods course which was offered on the WebCT system. Students were asked to answer their satisfaction with the benchmark along a 7-point scale (from Strongly Disagree to Strongly Agree). Students were also asked to consider the importance of the benchmark along a 5-point scale (from Not Important to Very Important).

Some researchers questioned the validity and reliability of studies on effectiveness of online learning: the main reasons suggested were poor control of the third variables in numerous comparative studies and small sample sizes. Especially, a number of researchers contended that studies in e-learning should be based on solid theoretical foundation of e-learning. Some of these researchers suggested that effectiveness of learning/teaching should be understood in a holistic approach with technical, social, and personal factors taken into account.

In the pursuit of explaining the major elements of online learning quality that will have impact on satisfaction with online learning, Peltier et al. (2007) proposed the Model of the Perceived Quality of the Online Learning Experience. This model features six dimensions of teaching quality: (1) student-to-student interactions, (2) student-to-instructor interactions, (3) instructor support and mentoring, (4) lecture delivery quality, (5) course content, and (6) course structure. These six quality dimensions were developed based on three conceptual models; the virtual communities perspective model (Peltier et al., 2003), the effective online learning model (Marks et al., 2005); and satisfying and dissatisfying factors in online learning model (Chyung & Vachon, 2005). Data were collected from 299 students taking online MBA courses. The dependent variable of the quality of the learning experience was measured with three-item global quality scale pertaining to the amount of learning, enjoyment of taking the course, and the likelihood of recommending it to friends and colleague. The result showed that course content was the single most important factor determining the perceived quality of the online learning experience. The quality of instructor-student interactions and student-student interactions were not found to directly impact perceptions of the overall quality of the course.

Factors that determine the effectiveness of e-learning

Information quality

As is the case with the traditional classroom, course content in an online learning environment should not be an easy task. A number of studies evaluating e-learning system and service, either qualitative studies or surveys have included information or content quality as a dimension. In qualitative studies, information quality mostly referred to all instructional materials and course design. Instructional materials include course contents posted on instructional web by the instructors, hypermedia, simulations, and game-based learning modules.

What is taught in online courses is delivered through instructor-delivered content, internet-driven content, and assigned learning and assessment activities (Peltier, Schibrowsky, Drago, 2007). Several studies measured information quality based on the DeLone and McLean Model of Information Systems Success (Chiu, Hsu, & Sun, 2005; Klobas & McGill, 2010; Roca et al., 2006). In an empirical study conducted by Roca et al. (2006), information quality referred to quality of the output, such as timeliness, scope, relevance, ease to understand, appropriate format, reliability of output information, clearness, completeness, and accuracy of information generated by an information system (DeLone and McLean, 1992). The information quality measured by nine items had Cronbach Alpha of 0.96. The researchers found that the information quality of e-learning system/service had the greatest effect on users' satisfaction among the three qualities such as information quality, system quality, and service quality. In an empirical study to identify the role of involvement, building on the DeLone and McLean Model of Information Systems Success, Klobas and McGill (2010) defined information quality as the "suitability of the information" for the user's purpose, and the information quality was measured in terms of accuracy, reliability, time line, relevancy, understandability, completeness, and format of e-learning system and service. The level of Alpha was all above 0.7.

Several empirical comparison studies showed that students in online courses perceived that they consider course content as much more important than instructor's

presence. Miyazoe and Chiyodaku, (2010) examined the relationship between course design and interaction in terms of satisfaction. After conducting a comparison study between traditional class and online, Miyazoe and Chiyodaku (2010) noticed that students in online class indicated that information was their first priority. In contrast, students learning on traditional class indicated student-instructor interaction was their first priority. This tendency was increased as students got older. Concerning this finding, the researchers' interpretation was that more mature students acquired higher skills of self-direction than younger students so that they preferred content-interaction to student-instructor interaction or student-student interaction. Also, interestingly, there were gender differences on the perception of course content as Young and Norgard (2006) also noticed. Female students felt more positive about the usefulness of the lecture materials and course assignments than male students. Similarly, in the study with students enrolled in a Tourism and Hospitality Management class, McDowall and Lin (2007) also found that students who preferred traditional teaching methods strongly preferred the presence of the instructor while students who preferred video-conferencing indicated that the ability of the teacher to explain the subject matter was more important to them than the presence of the teacher.

Some researchers are of the view that managing the course design – designing the right mix of interaction and structure - is critical to the learning/teaching effectiveness. Benson and Samarawickrema (2009) contend that educational course designers should understand students' characteristics and the concept of "*transactional distance*" (p. 7), which involves "psychological distance" between learners and the teachers, in order to deal with the appropriate balance of dialogue, structure and learner autonomy. Referring to the Moore's (1993) notion that course structure is inversely related with dialogue, they suggest that knowing students' perceived psychological distance is the starting point to developing effective course design for online learners. Benson and Samarawickrema (2009) proposed a chart depicting structure-dialogue-autonomy, and implied that learning activities do not always require dialogue, although high structure and high dialogue can reduce transactional distance (Moore, 1993).

Technology-related and System quality

The result of literature review reveals that technology –related factors regarding online learning were linked to the capability or quality of hardware and software available to learning environment. Empirical studies about online learning and e-learning system show that the quality of online learning is mostly related with usability of web-sites (Dobbs, 2000; Fabianic, 2002; Zhao, 2003). It seems natural given that students in online learning as well as in traditional learning depend on instructional websites nowadays. Fabianic (2002) and Dobbs (2000) analyzed the criteria especially used by students to judge the quality of an e-learning website. These criteria comprised presentation, navigability, reliability, external recognition, responsiveness, speed, customer care, access, content relevancy, content richness, content currency, site aesthetics, personalization, authority, assurance, FAQs and help, special services, tailored communication, and trust.

On the other hand, in line with the multidimensional characteristics of website quality, Büyüközkan, Ruan, & Feyziog (2007) developed seven criteria using multi-criteria decision-making (MCDM) method. They are right and understandable content, complete content, personalization, security, navigation, interactivity, and user interface. If students encounter a poorly designed website, the online course can fail to produce learning outcomes (Trentin, 2006). Reisetter et al. (2007) found that students taking an online class attributed their successful mastery of the course contents to the structure of the website itself in addition to feedback from, and access to, the instructor.

Other researchers indicated that the use of multiple technologies in different contexts was crucial for effectiveness of online learning. Benbunan-Fich, et al. (2005) consider ‘media mix’ to be the most important variable since selecting right technology should be based on pedagogical technique (i.e., peer evaluation and feedback, group case discussion) and thus, it is related to the enhancement of learning. Several researchers have proposed models for selecting educational technologies (Bates, 2005; Lambert & Williams, 1999; Laurillard, 1993; Mayes & Fowler, 1999). Laurillard (1993) analyzed different educational media for their ability to support learning at each step of that process and presented “media comparison table” (Laurillard, 1993, p 177). This work was based on her conversational

framework, which depicts the elements of learning process. The learning process consists of dialogue between teacher and student, operating at the level of academic knowledge. Thus, the learning process needs to include a combination of discursive, adaptive, interactive and reflective activities. In the same line, considering elements of learning process, Lambert and Williams (1999) developed a three-step model for choosing educational technologies and demonstrated applying them to the development of new clinical courses (Table 2.1).

Table 2.1.

Classification of Technologies for Enabling Learning

Learning Process	Suitable Technologies
Information Transmission	-
Presentation	Print-based documents, On-line documents File transfer, Broadcast radio or TV Audio-tape, Video tape, Electronic white board
Search & Retrieval	Library catalogue, Hypertext, Online databases
Learner response	Documents preparation
Discursive	Telephone, Audioconferencing Videoconferencing, Audiographics, Shared whiteboards, Computer-mediated communication E-mail, Computer conferencing
Adaptive	Computer based testing, Multimedia
Interactive	Simulation, Computer based tutorials Intelligent tutoring systems
Reflective	Computer conferencing, Multimedia

Note. Adapted from “A model for selecting educational technologies to Improve Student” by Lambert & Williams, p.12-15.

When it comes to functionality of technology characteristics, learning management system (LMS) features content and assessment as well as communication. For example, the online course forms one of three types as follows: 1) course is supplemented by tutorial

support with a low level of interaction, 2) online interactions and discussions occupy half the students' time, and 3) course is defined by collaborative activities, discussions, and group assignments (Mason, 1998). Following are some of the resources available on a course website.

- Power point presentations used in lectures
- Course reading lists
- Selected links to websites related to the discipline, including online journals and readings, and library holdings
- Course schedule, including due dates for assignments
- Assignments, exam questions
- Self-assessment tests
- Online discussion forums, for post-lecture discussions
- Biographies of the course teacher or teachers
- Student biographies

Instructor interaction and service interaction

Qualitative research (e.g. interview, forms etc.) as well as quantitative research based largely on students' perceptions produce consistent findings about students' views of teaching quality and of effective teacher behaviors. Research in this theme suggest that teacher involvement and active participation is appreciated by students. Several studies (Liaw, Huang, & Chen, 2007; Sheard et al. 2001; Selim, 2007) conducted a survey also suggest e-learning depends on instructors' interactive style, attitude and behavior toward technology. Selim (2007) found that instructors' attitude toward interactive learning was the most critical success factor (CSF) over other factors such as control of technology, teaching style, students' computer competency, interactive collaboration, course contents, design, access, infrastructure, and support.

After analyzing the data collected electronically from 170 students both in partially and fully online English course Boyd (2008) found student's feeling of connection is much

more important than the amount of interaction as Young and Norgard (2006) indicated in their study with a sample of 233 students over 20 online courses. In Boyd's (2008) study 75 percent of participants perceived that they had the same or greater amount of interaction with their instructor, however, students still perceived a lack of opportunities to interact with their instructors. With this finding Boyd conclude that feedback or instructional immediacy becomes even more important when students never meet their instructor and students' perception of the timeliness and quality of instructor feedback tends to have a significant impact on students' sense of the success of the course.

Concerning instructors' attitude, Liaw, Huang, & Chen (2007) found that instructors who participated in their study displayed highly favorable attitudes toward e-learning environments as a useful teaching-associated tool and that their intention to use e-learning was influenced by perceived usefulness and self-efficacy. On the other hand, Sheard et al. (2001) found that many faculty members viewed the web as a convenient tool to provide students with instant information, implying that they produce web resources because of students' expectations rather than for any perceived teaching or learning benefits.

Student Characteristics

A number of studies (see Table 2.2. and Table 2.3.) reported whether demographics had different impact on the level of perception of quality or satisfaction with online learning (Hong, 2002; Swan et al., 2000; Yang & Cornelius, 2004; Artino, 2008; Castán & Martínez, 2006). Some researchers suggested that female or older students are better suited to Web-based learning than male or younger students in terms of satisfaction (e.g., Fredericksen et al., 2000; Swan et al., 2000; Castán & Martínez, 2006). Others argued the opposite (e.g., Karuppan, 2001). Others reported no different impacts of sex and age on satisfaction (Artino, 2007; Hong, 2002), success with or on attitudes toward Web-based learning (Jiang & Ting, 1998). Other researchers reported that female students were more sensitive in dealing with instructors in online learning (Chen & Marciani, 2004); more positive and more satisfied with online course, but desired higher interaction (Young & Norgard, 2006).

Castán and Martínez (2006) analyzed contextual factors with regard to the perceived quality. The factors used in the study include students' sex, age, higher education experience, experience in online education, motivation, academic performance, type and location of the connection used by students, and the cost of the fees. The result of the study showed that age, motivation, and area of knowledge had positive influence on perceived service quality. The experience of previous university education, the experience in online education, and the cost of fees were found to be negatively correlated with perceived service quality.

Several studies (Rovai, 2003; Jones, Packham, Miller, & Jones, 2004; Levy, 2007) also identified causes of withdrawal: students' academic profiles, their family situation, and study time. Willging and Johnson (2004) were specifically interested in reasons students chose to drop out of online courses. Based on logistic regression analysis, they found that gender, race, residency, previous employment status, and GPA mainly predicted online students' retention, and identified GPA as the most significant factor.

As such, a number of researchers have put their efforts to determining the key attributes of a high quality online learning environment in various ways. Table 2.2 lists studies that were relevant to the key factors that contribute to the successful learning.

Table 2. 2.
A Summary of Key Factors that Affect the Effectiveness of Online Learning

Factors	Study
Technology-related	Roca et al. (2006); Selim (2007); Masrom et al. (2008); Pituch & Lee (2006); Kort & Gharbi, n. a.); Carr-Chellman & Duchastel (2000); Selim (2007).
Information-related, pedagogic, Course design	Roca et al. (2006); Masrom et al. (2008); Marks et al. (2005); Benson & Samarawickrema (2009); Selim (2007).
Interaction-related	Arbaugh (2000ab); Anderson (2003); Miyazoe, & Chiyodaku, & Anderson (2010). Kun-Ming & Khoon-Seng (2005); Gil (2008); Chen, Lin, & Kinshuk (2008); Marks et al. (2005); Paechter et al. (2010). Swan (2001).
Instructor characteristics	Arbaugh (2001); Boyd (2008); Marks et al. (2005); Song et al. (2001); Selim (2007); Webster & Hackley, 1997). Witt & Wheelless (2001).
Student characteristic	Arbaugh (2000); Benson & Samarawickrema (2009); Castán & Martínez (2006); Romero et al. (2007); Selim (2007); Roca et al (2006).
Support services administration service, institutional factors	Castán & Martínez, 2006; Howell & Wilcken (2005); Levy, 2007; Weaver (2008); Willging & Johnson (2004).

Satisfaction

Definition

According to Oliver (1997), satisfaction is the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided a pleasurable level of consumption-related fulfillment. Thus, satisfaction is captured as a positive feeling, indifference, or a negative feeling (Anderson, 1973). Tse and Wilton (1988) define satisfaction as the consumer's response to the evaluation of the perceived discrepancy

between prior expectations (or some norm of performance) and the actual performance of the product as perceived after its consumption (p. 204). With the rise of e-commerce, researchers introduced the concept of e-satisfaction. Hise and Szymanski (2000) define e-satisfaction as the consumers' judgment of e-service offerings in the virtual marketplace. The definition of e-satisfaction is very similar to the definition of e-service quality by Santos (2003).

In the e-learning context, a student is considered a customer of e-learning services. Satisfaction can be the result from the interactions between the student and the e-learning environment surrounding students, which includes instructional course website, instructors, peer students, support service. Therefore, satisfaction with learning is a multidimensional concept. Giese and Gote (2000) define e-learner satisfaction as a summary affective response of varying intensity that follows asynchronous e-learning activities, and e-learner satisfaction is stimulated by several focal aspects, such as content, user interface, learning community, customization, and learning performance. For this study, the definition of satisfaction is students' affect with (feelings about) prior e-learning use (Oliver, 1997).

Satisfaction and Expectation Disconfirmation Theory (EDT)

The expectation confirmation theory which is based on the above definition well explains how satisfaction forms. Consumers form an initial expectation of a specific product or service prior to purchase, form perception about its performance after accepting and using that product or service for a period of initial consumption, assess its perceived performance, and finally determine the extent to which their expectation is confirmed (see Figure 8). If the perceived performance matches expectations, confirmation occurs. If there is a disparity between them, disconfirmation occurs, which in turn affects the level of satisfaction either positively or negatively (Oliver, 1980). As such, EDT suggests that consumers determine satisfaction with products or services by comparing perceptions of performance against their pre-purchase "predictive expectations" (Miller, 1977) about anticipated performance. Expectation Disconfirmation Theory (EDT) is a widely accepted marketing theory that can predict and explain consumers' satisfaction (Patterson & Johnson, & Spreng, 1997; Oliver, 1980; Page & Spreng, 2003).

One of the predictors of satisfaction in EDT is performance. Performance and satisfaction are found to be positively associated. Offering with high performance levels tends to correspond with higher levels of satisfaction. Performance has a direct impact on satisfaction while disconfirmation mediates some of the performance effects. Churchill and Suprenant (1982) state that the impact of perceived performance depends on product categories and should not be ignored.

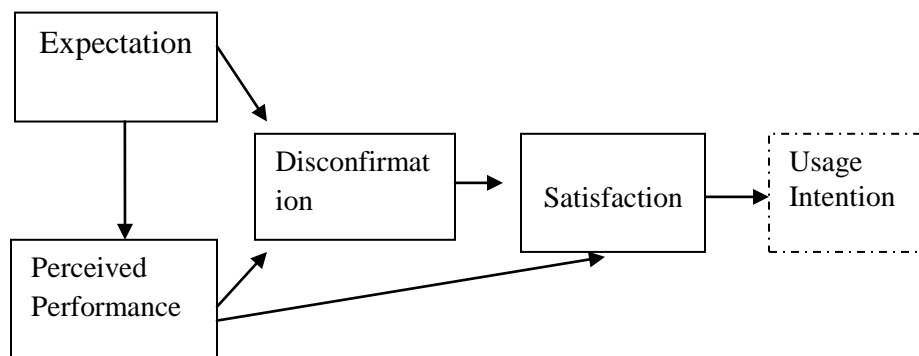


Figure 8. Expectation disconfirmation model. Adapted from “Understanding information systems continuance: An expectation confirmation model,” by A. Bhattacharjee, p.353.

Therefore, according to EDT, the better the performance or the more positive the disconfirmation, the greater the satisfaction. The validity of EDT has been proved in a number of studies including studies on consumers’ behavior of accepting information system (Bhattacharjee, 2001ab; Huh, Uysal, & Williams, 2003; Khalifa & Liu, 2002; Pizam & Milman, 1993).

Factors that Determine Students' Satisfaction with Online Learning

Several researchers conducted both qualitative studies (Yang and Cornelius, 2004; Reissetter, et al., 2007; Rivera and Rowland, 2008; Gil, 2008) and empirical studies (Chen, et al., 2006; Swan et al., 2000; Chiu, et al., 2005; Roca, et al., 2006; Chen and Willits, 1998; Lin, Lin, & Laffey, 2008; Marks, et al., 2005; Chyung & Vachon, 2005; Peltier, et al., 2007; Klobas & McGill, 2010) in their efforts to understand what students' experience of online learning are like. Qualitative studies focused either on students' positive/negative experiences; or on critical incidents; or on comparison between online and classroom learning. Empirical studies focused either on the validity of previously established constructs in marketing and IT areas; or on elements of teaching and learning or learning process; or on online course evaluation (see Table 2.3).

In the category of qualitative studies, Yang and Cornelius (2004) examined positive and negative experiences of students regarding the quality of online learning. They employed interviews, observations, and document collection for the examination. Interviews and observations were conducted with three students. Various data were collected from two universities and one community college. According to the results, factors that contributed to students' positive experiences were flexibility, cost-effectiveness, electronic research availability, ease of connection to the internet, and well-designed class interface. Factors that contributed to students' negative experiences were delayed feedback from instructors, unavailability of technical support from instructors, lack of self-regulation and self-motivation, the sense of isolation, monotonous instructional methods, and poorly-designed course contents.

Using the critical incident technique (CIT), Gil (2008) focused on identifying the critical incidents that may have impacts on learners' satisfaction with e-learning. The technique has been used to identify various scenarios of user behaviors, providing rich data of original user experiences that may be explored in detail to understand their behavior, its causes, and its consequences. As the researcher expected, frequent occurrence of negative critical incidents had significant potential of negatively affecting satisfaction. The researcher found four categories of critical incidents that affected e-learning satisfaction: administration,

functionality, instruction, and interaction. Among those categories, interaction and instruction were found to be the most important factors that have impacts on satisfaction with online learning environment.

Students seem to prefer or adjust to the present learning environment that they have chosen whether the learning is online or in campus. Reisetter, et al. (2007) compared a traditional group of students with an online group taking the same graduate class in research methods using the same materials and with the same instructor. Group scores were measured on the pre and post quantitative measures. According to the result, traditional learners attributed their successful learning to specific classroom variables such as the teacher and organization provided by the teacher, emphasizing the importance of personal interactions with both their teacher and peers. They felt that the classroom provided them with multi-sensory learning. These respondents perceived "accessibility" as "immediacy" of access to the instructor and to their peers. On the other hand, online learners attributed their successful mastery of the course contents to the structure of the website itself in addition to feedback from, and access to, the instructor. They identified self-regulation and self-discipline as the key factors to their success. They recognized that the lack of face-to-face interactions presented unique challenges and responsibilities.

After conducting a qualitative study, Rivera and Rowland (2008) stated that instructors' increased involvement in asynchronous course would improve discussions in online learning class. Some students expressed a desire for their professors to be more available. Others felt that professors need to make personal connections with students. The result was consistent with the finding of Young and Norgard (2006)'s descriptive analysis of their survey in that students indicated dissatisfaction when instructors did not participate in discussions or responded to questions within a very limited time frame.

A number of researchers (Chen, et al., 2006; Swan et al., 2000; ; Chiu, et al., 2005; Roca, et al., 2006; Chiu & Martinez, 2006) have conducted empirical studies to determine the factors that influence satisfaction with online learning. In general, according to literature review, studies about students' satisfaction with online learning can be categorized into three types. The first type focused on testing whether the previously established theoretical constructs in marketing and information technology could predict students' satisfaction with

e-learning (Roca, et al, 2006; Lee, et al, 2000). Confirmation, perceived usefulness (PU), self-efficacy (SE), perceived behavioral control (PBC), and subjective norm (SN) are typical theoretical constructs introduced for the studies in this type. The second type focused on teaching and learning factors (Hong, 2002) and on performance of learning process, such as varied types of interaction and collaboration (Chen and Willits, 1998; Swan et al., 2000). Some of these studies pertaining to teaching and learning or learning process have also proposed models (Lin, et al., 2008; Marks, et al., 2005; Chyung & Vachon, 2005; Peltier, et al., 2007; Klobas & McGill, 2010). The third type focused on the results of online course evaluation. In general, the findings of these studies imply that satisfaction with online learning is explained by numerous factors. However, those factors are mostly related with the issues of course content, instructors, students, technology, and support service and learning environment (see Table 2-3).

Using Thorndike's law of effect and Herzberg's motivation-hygiene theory, Chyung and Vachon (2005) proposed a model aiming at providing a practical guideline to e-learning practitioners. The purpose of the study was to investigate benchmarks of satisfying (motivational factor) and dissatisfying factors that students perceived during e-learning. In order to do that, researchers took a qualitative approach. The researchers obtained course evaluations data from 228 students in 17 classes and conducted content analysis. The selected 17 e-learning courses were of graduate level, asynchronous online courses offered by a university in the northwestern region of the US. Results showed that participants in this study frequently described learning-oriented factors as satisfying factors. The satisfying factors reported were relevant to learning content, effective teaching methods, and instructor's expertise. On the other hand, e-learners described lack of their instructor's participation during class discussions and lack of clarity in instructional directions as dissatisfying factors. These factors caused confusion or frustration while the students were trying to accomplish their goals.

Klobas and McGill (2010) expanded DeLone and McLean (2003) model of information systems success. The new proposed model included two new variables such as the role of student and the role of instructor in e-learning system (WebCT). The primary purpose of the study was to identify the effect of involvement on Learning Management

Table 2.3.
Summary of Factors that Affect Satisfaction with Online Learning

Author	Sample	Variables	Method
Arbaugh & Benbunan-Fich (2007).	40 online MBA course	learner–instructor interaction, learner–learner interaction and learner–system interaction.	Quantitative
Yang & Cornelius (n.d.)	3 students. Documents	Satisfiers : flexibility, cost-effectiveness, e-research availability, ease of connection & well-designed interface, Dissatisfiers : delayed feedback, unavailable tech support from instructors, lack of self- regulation and self-motivation, isolation, monotonous instruction, poor content.	Qualitative (Descriptive) Structured/unstructured interview, observation, and documents
Young & Norgard (2006)	233 online learners	Course materials contribute to discussion and support course goal; Gender (F > M)s Femal prefer higher interaction and perceived usefulness of course materials, & assignment.	Survey (Descriptive)
Swan et al. (2000)	1406 student in 73 courses	Interaction (student-student; student-instructor); gender (F>M); age (36-40);	Survey (ANOVA)
Chiu et al. (2005)	189 e-learners	PU, PQ, PV, & usability- disconfirmations.	Survey (SEM)
Lee et al. (2006)	381 e-learning users	Confirmation, perceived usefulness, perceived ease of use	Survey
Roca et al. (2006)	172 who had taken at least one e-course at UN System Staff College	Information quality, system quality, service quality; PU, PEOU; Confirmation; cognitive absorption	Survey (SEM)
Chen et al. (2006)	449 students in Sport-institutes	Course material; student services; instructor's trait . gender (M > F); age (younger); course experience (less > more)	Course survey (Descriptive)
Castán & Martínez, (2006)	1,870 students of	Age, motivation, area of knowledge \diamond PSQ (+); previous university education, experience in online education, & price \diamond PSQ (-).	Regression
Swan et al. (2007)	CS	Course design; ease to navigate; student –instructor interaction;; ; learning communities.	Regression
Marks et al. (2005)	659 students in MBA	Instructor-student interaction, student-student	SEM
Artino (2008)	646 Service Academy Undergraduates	Task value, Self-efficacy, Institutional quality	Regression
Kort & Gharbi (2008)	443 students	Interface, learning community, content, personalization, and global satisfaction	Regression

System (LMS) success. The researchers measured LMS success in terms of students' satisfaction, use, and benefits. The e-learning system referred to WebCT. To measure student satisfaction, the researcher adapted items from Roca et al. (2006), Seddon and Kiew (1996), and Klobas and Clyde (1998), and the three items used for measuring student satisfaction with e-learning system were enjoyability, experience of using the site, and site supports learning. Four items were used to gauge students' perceptions of the benefits of their LMS use, reflecting the process benefits in terms of efficiency and productivity, and the perceived contribution of LMS use to learning. All items were measured on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). Data was collected by online questionnaire. A total of 244 students among 3000 were selected using quota sampling. Results revealed that students' perceptions of LMS quality explained 57.3% of variation in satisfaction. Student involvement and instructor involvement explained only 7.8% of the variance in satisfaction. Slight but significant effect of student involvement and instructor involvement on satisfaction disappeared when researcher introduced quality variables and individual characteristics to the model. On the other hand, student involvement was shown to have a significant effect on the benefits to students of LMS use. The more involved a student is with the LMS site for a course offering, the stronger the benefits they report obtaining from use. Researchers also examined the effect of involvement on information quality based on the notion that the information quality in an LMS is likely to reflect the extent of an instructor's commitment to developing a learning environment that is engaging and informative for users and be reflected in student perceptions of information quality. Results showed that both instructor involvement and student involvement affected information quality, with instructor involvement having a stronger effect. Neither system nor service quality were affected in this study.

Other empirical studies using course evaluation data also contribute to understanding students' perception. Chen, et al. (2006) analyzed 449 course evaluation surveys collected from United States Sports Academy's full online course. Researchers identified five service categories measuring online course quality and these five factors explained 72.3% of student satisfaction with the online course. The five factors that were identified in factor analysis as explaining students' satisfaction were (1) course materials, (2) instructor's traits, (3) library,

(4) learning resources, and (5) student services. The stepwise regression analysis also identified the best predictors of overall course rating. Course materials, Student Services, and instructor's traits in order were important predictors of overall satisfaction in sport-specific graduate institutes.

Bolliger (2004) conducted an online survey with 303 graduate students. The modified 42 items of Telecourse Evaluation Questionnaire constructed by Biner (1993) was used to identify factors that affect online learners' satisfaction. The majority of respondents were female (71%) and were in the age group from 30 to 49. Results showed that the three extracted components of instructor, technology, and interaction explained 73 percent of variance of satisfaction.

Hong (2002) investigated the effect of students' and instructional variables on satisfaction and achievement in a Web-based course. Results indicated that gender, age, learning styles, time spent on the course, and perceptions of student–student interactions, course activities, and asynchronous Web-based conferences were not related to satisfaction and learning outcomes. With regard to students' ability, students who entered the course with better Cumulative Grade Point Average (GPA) scores achieved higher final grades in the online course, but did not express more satisfaction with the learning environment. The subjects in this study consisted of 26 students studying a compulsory course in the Master of Science (Human Resource Development) program in Malaysia.

Students' social abilities and their motivation levels can predict students' satisfaction with online learning. Lin, et al. (2008) examined how social and motivational attributes influence students' online learning experiences. Based on a review of social theories of learning and research about motivation, the researchers generated four constructs: Social ability, learning goal orientation, perceived task value, and self-efficacy. Social ability generated four dimensions: social presence-students, social presence-instructors, social navigation, and written communication skills. The results, based on structural equation modeling, showed students' characteristics (perceived task value, self-efficacy, and social ability) play an important role in explaining students' satisfaction with online learning.

In tandem, Swan et al. (2000) further reported that gender and age influenced their satisfaction with asynchronous online learning. Women reported significantly higher levels

of satisfaction and perceived learning than men. Students in the thirty-six-to-forty-five-old range were the most likely students to report high levels of satisfaction and perceived learning from their courses. With regard to this finding, Swan's interpretation is that since students in this age group have professional responsibilities, they have higher expectations of and more serious attitude to learning, which lead to stronger motivation than younger and older students.

On the other hand, Chen et al. (2006) reported that younger students, students having less experience in online learning courses, and female students were more satisfied with online learning class than male students. The study was to assess the service quality of U.S. Sports Academy's online course curriculum. A total of 449 graduate students who enrolled in 130 distance learning courses participated; 73.7 % of respondent were male students and 85.7 % of respondents were under 40-year in age. Also majority of respondents did not appear to have long-term experience in online learning as 76% of the respondents reported that they had taken less than five online courses. The student evaluation survey was conducted via electronic method after each student had completed the last unit assignment. Both t-test and ANOVA analysis were utilized to test the differences among different factors based on demographic variables, such as gender, age, course experience, and class status. Hong (2002) found that satisfaction was not related with age, gender, or experience.

Using survey method, a number of researchers investigated the relationship between learners' interaction and satisfaction (Arbaugh, 2000ab; Bolliger, 2004; Chen, et al., 2008; Chen & Willits, 1998; Irons, Jung & Keel, 2002; Swan, 2001). Students' satisfaction increased when there is an increase in classroom interpersonal interactions (Swan, 2001). Students perceived interaction and instruction much more important than functionality and administration (Chen, et al., 2008). In general, interaction between students and instructors showed much stronger predictive power for students' satisfaction than interaction among peer students.

Chen and Willits (1998) studied 121 participants from a large Northeastern university. Participants consisted of students enrolled in one of the 12 video conferencing courses at the main campus or at one of the branch campuses of the university. Students' perception of gaining knowledge and satisfaction was correlated with the extent of

participation of instructors. When the instructor was an active participant, student-student interaction and student-instructor interaction increased. Students also reported a high level of satisfaction and an increased level of learning.

Studies show that student-instructor interaction is much more important than student-student interaction for learning outcome and satisfaction. For example, the study conducted by Marks, et al. (2005) was to examine three interactions: instructor-student, student-student, and student-content and to predict which one is the most important explanatory variable of student learning and their satisfaction. The result showed that Instructor behavior toward student was the most powerful predictor, implying the importance of instructors' relationships with students. The researchers suggested instructors should emphasize their own interaction with students in Web courses after finding student-instructor interaction activities predicted learning outcome two time larger than student-student activities.

The objective of the study by Iron, et al. (2002) was to examine the relationship between the level of course design and the level of student interactivity as it predicts student satisfaction. In this study, the level of design was defined by increasing channels of interactivity; virtual classes that required students to use the web as a channel of interactivity (e.g. chat room, self-paced or knowledge-based navigational instruction) compared to those where the WebCT is simply used to publish course materials. To test the hypothesis that satisfaction increases with interactivity, independent sample t-test was used in the analysis of the independent variable (i.e. required Web component) in relation to satisfaction. The result showed statistical significance, suggesting that as the level of interactivity produced by the design (as more channels of interactivity are added) of a virtual class increases, there are higher student satisfaction ratings.

Perceived Usefulness (PU)

Definition

Perceived usefulness (PU) is defined as a person's salient beliefs that using the technology will enhance his or her job performance (Davis, 1989). Perceived ease of use is defined as a person's salient beliefs that using the system will be free of effort. Further, perceived usefulness and perceived ease of use both affect a person's attitude toward using the system, and consistent with Theory of Reasoned Action (TRA), these attitudes toward using the system determine behavioral intentions, which in turn lead to actual system use.

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) (see Figure 9), which was developed by Davis (1989), suggests that users' decision to adopt an IT is primarily determined by perceived usefulness and perceived ease of use. Davis (1989) first introduced the TAM as a theoretical extension of TRA. TRA is a well-known model in the social psychology domain, which posits that a person's behavior is determined by the individual's intention to perform the behavior and that this intention is, in turn, a function of his/her attitude toward the behavior and his/her subjective norm.

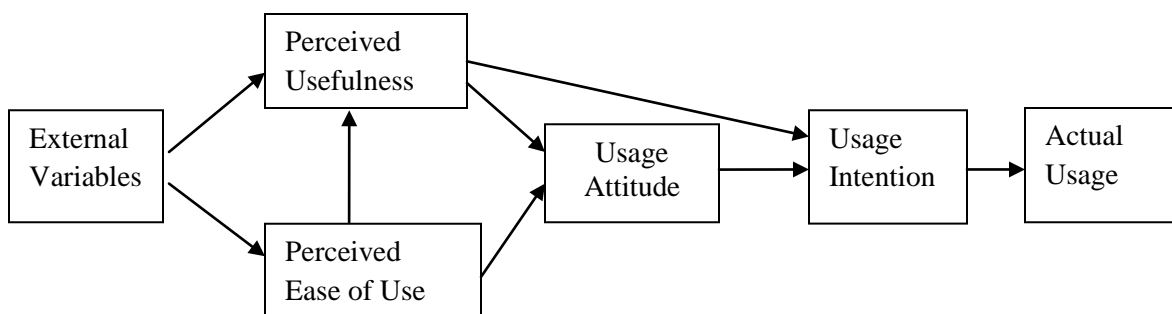


Figure 9. The technology acceptance model. Adapted from “.A theoretical integration of user satisfaction and technology acceptance,” by .B. H. Wixom and P. A. Todd, p. 87.

The causal relationships of the components of TAM have been extensively tested and verified in many studies of user acceptance in hospitality. These research have dealt with tourism websites including travel destination (Meiling, Lou, Remus, & Sheldon, 2007), hotel websites (Lam et al 2007), and airline B2C e-commerce websites (Kim et al, 2009). Another popular area that TAM was tested is employees' response to the use of new technology within an organization. The technologies that were tested for the acceptance include reservation system (Lee, et al., 2006), marketing decision support system (Wober & Gretzel, 2000), hotel front office system (Kim, Lee, & Law, 2008), and hotel information system (HIS) (Huh, Kim, & Law 2009). Outside hotel industries, researchers also have applied TAM to restaurant operation computing system (Ham, Kim, & Forsythe, 2008) and educational technology (Jacques, Deale, & Garger, 2006). Researchers, in many cases, added several external variables to the original TAM to see how they affect perceived ease of use, perceived usefulness, and intention to use. Kim, Lee, and Law (2008) extended TAM by introducing information system quality and perceived value in their investigation of the acceptance of Hotel Front Office System (HFOS). Other examples of external constructs that extended TAM include computer self-efficacy (Roca et al., 2006), internet self-efficacy (Hsu, Chiu, & Ju, 2004; Roca et al., 2006), subjective norm (Taylor & Todd, 1995; Venkatesh & Davis, 2000) and playfulness (Lee, Yoon, & Lee, 2009). The research, in general, supported the validity of TAM, either original or extended. Table 2.4 presents studies that confirmed TAM constructs in the hospitality/tourism contexts.

Table 2.4
Empirical Studies that Confirmed TAM in Hospitality/Tourism Contexts.

Authors	Applications	External variables	Methodology	Sample	Finding
Wober & Gretzel (2000)	Marketing decision support system	Experience Task	Survey	Employees	EOU→U; PU→U, Experience→A, EOU; Task→U
Lee, et al. (2006)	Reservation system	Task fit, Career fit, Organization fit	Survey	Employees	PU→I, PEU→I; Taskfit→PU, Career fit→PU, Organization fit→PU; organization fit→BI. PU→BI, Trust→BI, Habit→BI.
Liao, et al. (2007)	B2C Websites		Survey	Consumers	
Jacques, et al. (2006)	Interwrite PRS devices		Experimental	Students	
Lam, et al. (2007)	IT in upscale hotels	Task→technology fit Self-efficacy Subjective norm	Survey	Hotel employees	Perceived IT Bi→A; Perceived IT Bi→task-technology fit Task-technology fit→A; Self-efficacy→A, BI; SN→BI.
Meiling, et al. (2007)	B2C travel websites		Survey	Travelers	PU→BI, PEU→PU, BI.
Kim & Lee (2008)	Hotel front office systems	IS quality, Perceived value Users' acceptance	Survey	Frontline employees	IS quality, Perceived value→BI.
Ham, et al. (2008)	Restaurant system	User characteristics, System quality, Organizational support	Survey (SEM)	Restaurant employees	Support TAM
Huh & Kim (2009)	Hotel Information System (HIS)		Survey (SEM-AMOS)	Hotel employees	PU→BI-34%; A→BI-58.5%; SN→38.2%; PBC→50.4%.
Kim, et al. (2009)	Airline B2C web	Subjective Norm, Trust	Survey	Customers	Support TAM; SN→BI, T→BI

E-Loyalty

Definition

A person's actual behavior (see Figure 10) is directly guided by the person's behavioral intention (BI) (Ajzen, 1980). BI is a measure of the strength of one's willingness to perform a certain behavior (Ajzen, 1991). In marketing literature, loyalty, a behavioral intention, is developed by customers who feel they have obtained value from a product or service or a product or service fulfilled the customer's needs. The developed loyalty, in turn, breeds retention. Marketing scholars contend that customer defections have a stronger impact on the financial performance of an organization than other factors, as it pertained to gaining competitive advantage (Kandumpully & Suhartanto, 2000). The need for customer loyalty and retention becomes increasingly important as competition increases. In general, literature shows that loyalty is comprised of two components – recommendation and patronage (Lam, et al., 2004).

In marketing literature, it is a widely accepted norm that there is a close relationship between market orientation and performance. It is known that a firm's strategy of focusing on market orientation can create superior value, which can lock the market over the long-term. Jones and Farquhar (2003) stated that "customers are more likely to be retained if there is a customer-oriented climate in which contact staff can deliver service quality efficiently and effectively" (p.72). Researchers agree that customer-oriented climate or market oriented mind set creates customers' trust, commitment, dependence, cooperation, and valuable information exchange, and it develops further the long-term customer-supplier relationships as well as customers' value, which can facilitate an atmosphere that causes customers to stay. Oliver and Burke (1999) mentions that, above all, satisfaction is a necessary first step in loyalty formation.

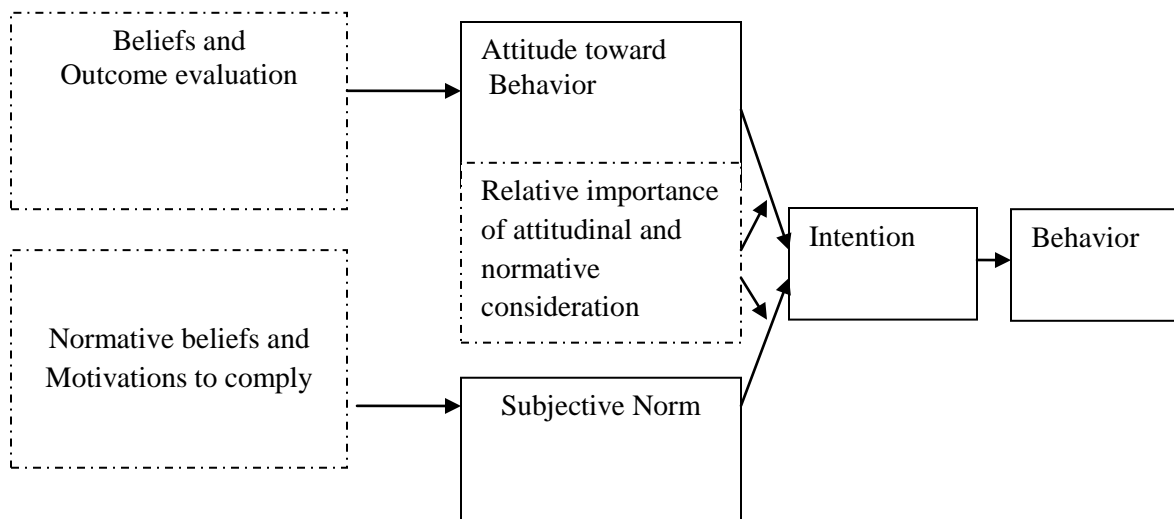


Figure 10. Theory of reasoned action. Adapted from “*Understanding attitudes and predicting social behavior*”, (p.100) by I. Ajzen and M. Fishbein, 1980, Prentice-Hall Inc. New Jersey.

Factors that Determine Behavioral Intention toward Online Learning

Table 2.5 presents empirical studies that examined factors influencing behavior intention toward online learning. Most of these studies were to examine theoretical constructs as antecedents of adopting online learning or continuance of online learning.

Keaveney and Young (1997) developed a student satisfaction and retention model. Grounded on the theory of reasoned action in which attitudes predict behavioral intentions, which, in turn, predict actual behavior, the model hypothesizes that student satisfaction (dissatisfaction) leads to intentions to stay (quit), which, in turn, leads to student retention (attrition). The retention model included four dimensions that affect student satisfaction, which, in turn, has impact on intention to stay/leave. The four dimensions of independent variables were faculty issues (understanding, accessible, professional, willing to help, provide feedback), advising staff (accessible, reliable, professional, willing to help, responsive, and understanding). classes (real-world relevance, project/cases), and outcomes assessment (cognitive development, career progress, business skills development).

Table 2.5
Factors Affecting Behavior Intention toward Online Learning

Author	Instructor	CS	Info..	Performance /Expectation	PU/ PEOU	Subjective Norm	Personal Attributes						Compati- bility	Social presence & Interaction
							F UN	S E	P B C	A T T I T U D E	V A L U E	G E N D E R		
Chiu et al. (2005)		X												
Liao et al. (2007)		X				X								
Chiu et al. (2005)		X												
Roca et al. (2006)		X												
Tung & Chang (2008)			X		X		X	X			X		X	
Chiu & Wang (2008)				X			X	X	X		X			
Rivera & Rowland (2008)	X													X
Lee & Lee (2009)					X		X							
Nichols & Levy (2009)		X		X						X				
Ong & Lai (2006)												X		

Proposed model and research hypotheses

Based on the reviews and theories discussed above, the researcher proposes five hypotheses and a model (Figure 11) as follows:

- H1: Students' satisfaction affects student e-loyalty.
 H2: Student's perception of online learning quality reflecting the instructor and service interaction (2PSQ) affects student satisfaction.
 H3: Students' perception of online learning quality reflecting the information and system (1PSQ) affects their perception of interaction quality (2PSQ).
 H4: Students' perception of online learning quality reflecting the interactions (2PSQ) affects perceived usefulness.
 H5: Perceived usefulness affects student satisfaction.
 H5: Perceived usefulness affects student satisfaction.

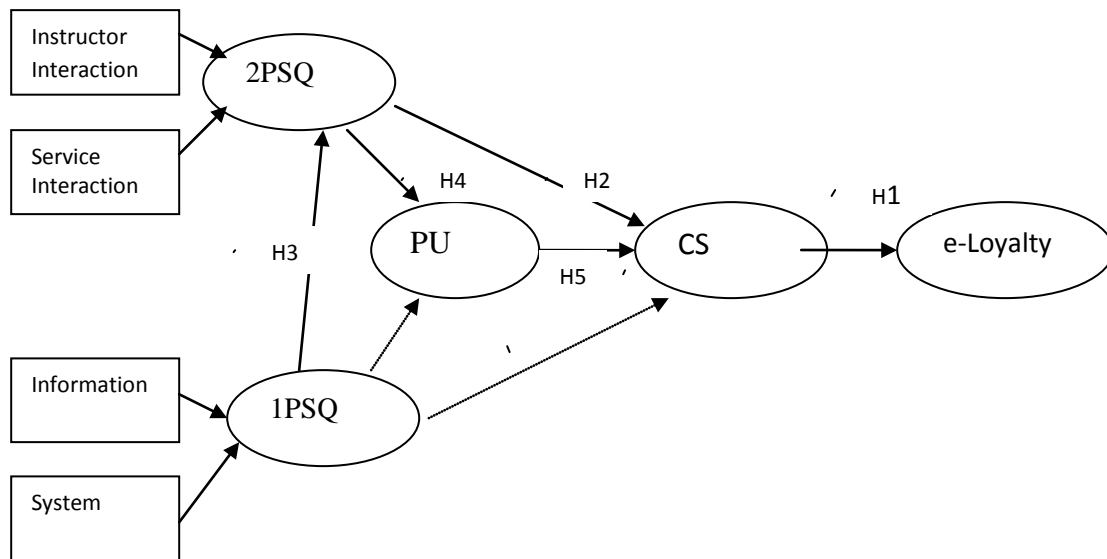


Figure 11. Proposed research model

A person's actual behavior is directly guided by the person's behavioral intention (BI) (Ajzen, 1991). BI is a measure of the strength of one's willingness to perform a certain behavior (Ajzen, 1991). The current study hypothesizes that key determinants of student loyalty, which reflects the continuance intention of online courses, is students' satisfaction. IS Success Model suggests three qualities predicting IS satisfaction. According to the Online Interaction Learning Theory model, the types of learning and teaching reflecting high interaction quality are likely to mediate inputs of learning and teaching quality and satisfaction.

Satisfaction

Satisfaction is the prime predictor of behavioral intention. In this study, loyalty construct consisted of items reflecting customer's repurchase intention. Based on EDT, several studies (Bhattacharjee, 2001ab; Khalifa & Liu, 2002; Liao et al., 2007) showed that satisfaction is a strong indicator of continuance intention. Khalifa and Liu (2002) also found empirically that satisfaction was the strongest predictor explaining club members' internet-based service use. In the e-learning context, several studies found that there is a strong link between satisfaction and continued use of an e-learning system or an online program (Chiu, et al., 2005; Liao et al., 2007; Roca et al., 2006). Especially, Liao et al. (2007) found that satisfaction was the most powerful indicator explaining 80% of variance in system use in their study. Furthermore, IS Success Model also posits that satisfaction increases system use.

H1: Students' satisfaction affects student e-loyalty.

Perceived service quality (PSQ)

Empirical studies have proved the association of perceived quality with satisfaction while integrating the technology acceptance model (TAM) with the expectation disconfirmation theory (EDT) (Chiu, et al., 2005; Roca, et al., 2006; Wixom & Todd, 2005).

In the proposed model, the perceived quality construct is considered equivalent to perceived performance (PP) in EDT. The perceived service quality (PSQ) is operationalized as representing post-consumption evaluation directly predicting students' satisfaction and behavioral intentions, and hypothesized that students reestablish a new level of expectation about online course quality as they experience the online course. The new level of expectation about online course quality, which can be a perceived usefulness (PU), may then serve to motivate students' further usage or lead to negative word of mouth.

Furthermore, the proposed hypothesis that the dimension of perceived interaction service quality (2PSQ) will significantly affect student satisfaction is consistent with the theoretical assumptions of the learning process and the IS Success Model (Benbunan-Fich, et al., 2005; Biggs, 1999; DeLone & McLean, 2003). For example, explaining the learning process on their theoretical models, Benbunan-Fich, et al. (2005) and Biggs (1999) suggested that learning process that is highly involved with interaction or students' deep learning approach, or collaboration rather than individual study directly affects students' learning and satisfaction. DeLone and McLean (2003) suggested high quality of the online learning service that may be created from student interactions with instructors strongly influence users' use of and satisfaction with online learning.

Research in the e-learning context (Chiu, et al., 2005; Roca et al, 2006) have shown that perceived quality is an antecedent of satisfaction. Chiu, et al. (2005) and Roca, et al. (2006) reported that that the perceived performance, which was decomposed into perceived quality and perceived usability, affected users' continuance intention through satisfaction. Several studies (Boyd, 2008; Rivera & Rowland, 2008; Selim, 2007) reported that instructors' active involvements in discussion including rich media content are all contributors to students' satisfaction with online learning. For this study, perceived service quality (PSQ) is assessed in terms of information quality, system quality, service interaction quality, and instructor interaction quality.

H2: Student's perception of online learning quality (2PSQ) reflecting the instructor and service interaction affects student satisfaction.

H3: Students' perception of online learning quality reflecting the information and system affects their perception about interaction quality.

H4: Students' perception of online learning quality reflecting the interactions (2PSQ) affects perceived usefulness.

Perceived usefulness

As online learning is highly associated with the technology application, learners' technology acceptance will play an important role in the success of online learning programs. Perceived usefulness (PU) is defined as a person's salient beliefs that using the technology will enhance his or her job performance (Davis, 1989). Studies from Information Technology (IT) area proves that the users' perceived usefulness toward an IT system has positive influence on the success of an IT system (Bhattacharjee, 2001a; Bhattacharjee, 2001b; Davis, 1989). For online course users to adopt an online class, they need to find the online learning system as well as the service as a useful tool in improving their performance in learning. When students believe using the online course improves their productivity and effectiveness, they are likely to consider taking the online course. In the case of persons who already had experience of online courses or are currently taking one, their intention to take an online class in the future will be affected by their positive or negative feelings about the online class(es) that they've taken. Chiu, et al. (2005) and Roca, et al., (2006) found that perceived usability, which includes perceived usefulness and perceived ease of use had significant effects on satisfaction and in turn accounted for users' continuance intention. Empirical support for positive association between perceived ease of use and other constructs such as perceived quality, perceived usefulness, and satisfaction is well documented (Lu et al., 2009; Wu & Chen, 2005).

H5: Perceived usefulness (PU) affects students' satisfaction.

CHAPTER III. RESEARCH METHOD

The main purpose of this study was to examine the relationship among perceived quality, perceived usefulness, satisfaction, and e-loyalty with regard to online learning. Specifically, the researcher intends to identify key determinants of students' perceived quality of, satisfaction with, and continued use of, online learning in hospitality programs. In addition, this study explores how interaction quality mediates students' perception of quality of online learning and students' satisfaction with it. The following section discusses the research design, sampling, instrument, data collection, and, finally, the statistical analysis that was used for this study.

Research Design

Quantitative research survey methodology was taken for this study. A survey is most frequently used in non-experimental design and is assumed mostly suitable for theory testing. A survey study could enhance the external validity of study results from managerial perspectives (Bakor & Treacy, 1986). In the context of online learning, in particular, it is imperative to evaluate online learning as a whole. Research-based empirical studies on online learning are scarce in hospitality although many empirical studies have been conducted in other subject areas. This study deals solely with hospitality programs in four-year public universities.

There was a possibility of a sampling frame error due to the exclusion of member programs not included in the list provided. A sampling frame error occurs when certain sample elements are excluded or when the entire population is not accurately represented in the sampling frame (Zikmund, 2003). Structural Equation Modeling (SEM) is a powerful multivariate technique that combines multiple regressions. SEM is suited to theory testing and starts with a hypothesis. Advantage of SEM is the ability to estimate the relationships among variables adjusting for measurement error.

Sample Selection

This study focuses on the perspective of students. Studies indicate that it is important to understand online learning quality from consumers' perspective. Students ultimately determine the success of online learning. As to hospitality programs, the top thirteen 4-year public universities that have graduate programs were selected. The target population in the study consisted of students who have ever taken at least one online learning course in the hospitality programs from Spring 2009 to Summer 2010.

Due to the difficulty in collecting all contacts of higher education institutions in the hospitality programs in the United States, a manageable list of higher education institutions was created based on the International Council on Hotel, Restaurant, and Institutional Education (I-CHRIE) Directory. I-CHRIE is a non-profit association for schools, colleges, and universities offering programs in hotel and restaurant management, foodservice management and culinary arts, facilitating exchanges of information in general for the hospitality and tourism industry. Zikmund (2003) supports the use of convenience sampling for exploratory research. Given the exploratory nature of this study, the use of convenience sampling is thus considered appropriate.

Sample size

The study targeted at collecting 250 responses from 4- year public universities with hospitality graduate programs. The sample size has a direct impact on the statistical power of any statistical method. In general, a researcher needs a relatively large sample size to detect the true difference when the distribution of dependent variables is skewed and the effect size is small. Hoelter (1983) recommended testing a model with a sample size of about 200. Hair et al. (1998) state that, in the case of SEM, there are four elements that affect the sample size requirements: model misspecification, model size, departures from normality, and estimation procedures. When the model includes all relevant constructs and indicators to the theory, the impact of the sample size on the ability of the model to be correctly estimated to identify specification error can be minimal. As model complexity increases, so do the sample size requirements. When the data meets the assumption of multivariate normality, the

conservative ratio of 10 cases per parameter is considered most appropriate (Hair et al., 1998). For maximum likelihood estimation (MLE), the acceptable minimum sample size to ensure appropriate use of MLE is 100 to 150 (Ding, Velicer, & Harlow, 1995). Following the conservative stance, the researcher set sample size as 250.

Instrumentation

The researcher developed a survey questionnaire on the basis of relevant literature to meet the objectives of the study (see Appendix B). The study instrument contains four major measures for a proposed model in the study. They are as follows: perceived quality, perceived usefulness, student satisfaction, and student loyalty. In addition to these four model constructs, belief and attitude toward online learning (Liaw et al., 2007) were measured.

A multi-stage process was employed for the development of the questionnaire. First, extensive literature review in the area of e-learning was done. The researcher investigated the elements of online learning quality, satisfaction, perceived usefulness, and student loyalty as well as their effects on behavioral intention. The researcher also conducted interviews with three students to get an insight and to refine the preliminary measures derived from the literature review. In general, all constructs and their items were adapted from previous research in which they were validated, with some appropriate modifications in the context of online learning usage. Five faculty members reviewed the instrument to ensure that the questionnaire design, wording, and measurement scales were appropriate. The instrument also was pre-tested with thirty graduate students. The participants were asked to take the survey online and provide comments about the content of questions and format to ensure the clarity and appropriateness of the items. The researcher checked whether all instructions and questions were understood as intended.

Measures

The following section describes how the variables in the model were measured. As for the reliability of the instrument, the items related to the proposed constructs were all adopted from the relevant research with minor adjustments. Since an online learning course utilizes a learning management system (e.g., WebCT, Blackboard system), which is a kind of information system, instruments were selected from the information system area as well as the distance learning and marketing areas. A total of 44 items were developed to predict the constructs of the proposed model. They are summarized in Table 3.1. The research instrument consisted of five components: 1) personal attributes (motivational beliefs such as enjoyment and self-efficacy, relative advantage/or flexibility, perceived behavioral control, and preference, 2) perceived e-service quality (information quality, system quality, service interaction, and instructor interaction), 3) perceived usefulness, 4) student satisfaction and e-loyalty, and 5) demographics and student information.

Table 3.1.
Sources of Measures for the Proposed Relationship Model

Construct	Operational Definition	No. of items	α	Scales adapted from
Student Loyalty	Student loyalty measures. Students' referral, continuance intention, and alumni-related behavioral intention.	5	0.7	Hennig-Thrau, Langer, & Hansen (2001); Eggert & Ulaga (2002)
Overall Satisfaction	Users' affect with (feelings about) prior e-learning use.	6	0.90	Oliver (1997); Keaveney & Young (1997)
Perceived Service Quality (PSQ)	Consists of four dimensions: (1) Information (2) System (3) Service interaction (4) Instructor interaction	30	0.72	Barnes & Vidgen (2002); Masorom et al. (2008) Paechter, Maier, & Macher (2010); Sherry, Fulford, & Zhang (1998).
Perceived Usefulness (PU)	Users' perception of the expected benefits of e-learning use.	3	0.86	Roca et al. (2006)

Measurement of perceived quality

For this study PSQ was operationalized reflecting four dimensions of online course aspects: (1) information quality, (2) usability, (3) service interaction, and (4) instructor interaction. To measure the learners' perceived service quality (PSQ) toward an online course these four dimensions with 30 items were borrowed mainly from the studies by Barnes and Vidgen (2002), Sherry et al. (1998), and Paechter et al. (2010). The scale items for the first three constructs - Information Quality, System Quality, and Service Interaction - were adapted from WebQual 4.0, with one additional item (i.e., browsing speed). The fourth construct of Instructor Interaction was adapted from Paechter et al. (2010) and Sherry, et al. (1998),

WebQual 4.0 is known to keep the emphasis on users and their perceptions of websites. System quality refers to site design and usability. Two items measure appearance, four items measure ease of use and navigation, and two items measure the image conveyed to the user (i.e., conveys a sense of competency, creates a positive experience). Information quality refers to the "suitability of the information" for the user's purpose. Items measure the quality of information of accuracy, reliability, time line, relevancy, understandability, completeness, and format. Service interaction quality in the WebQual 4.0 measures the quality of the service interaction experienced by users as they engage deeper into the site, embodied by trust and empathy. Service interaction quality measures transaction and information security, product delivery, personalization, and communication with the website owner. For this study altogether 22 items were adapted to measure perceived online course quality, with minor modifications. For example, one item relevant to safe feeling about transaction in the context of e-commerce (it feels safe to complete transactions) was adjusted to a connected feeling toward interaction with instructor and other students based on the previous scale (Sherry et al., 1998). The item measuring the connected feeling matches well with the original operationalization of service interaction, which reflects empathy and trust. All items were rated on a 7-point Likert-type scale, ranging from (1) strongly disagree to (7) strongly agree.

The reliability and validity of the WebQual 4.0 and Instructor Interaction have been established in previous studies (Barnes & Vidgen, 2002; Paechter, et al., 2010; Sherry, et al., 1998).

Measurement of student loyalty

Scale items that are commonly employed to measure loyalty capture the behavioral and attitudinal dimensions of loyalty (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Prior works show that commonly reflected items are retention (repurchase intent from the current service provider) and recommendation.

The advantages to an educational institution of having loyal customers are not restricted to the period when these customers are formally registered as students: the loyalty of former students can be important for the institution's success (Hennig-Thurau, Langer, & Hansen, 2001). In this study, student loyalty refers to the loyalty of a student during and/or after his or her time at the university. A former student's loyalty can be expected to be predominantly based on his or her experiences while at the university.

Five items were developed from the study of Eggert and Ulaga (2002) and Hennig-Thurau et al. (2001). Three items measure retention developed by Eggert and Ulaga (2002), which demonstrated a high reliability of $\alpha = 0.91$. Two items measure the word of mouth recommendation of the online course and the university to someone. The recommendation items, which depict the behavioral aspect of the student loyalty ($\alpha = 0.78$) were verified in a number of relevant studies (Hennig-Thurau et al., 2001; Sudhahar, Israel, Britto, & Selvam, 2006). Each item was measured on a seven-point Likert scale, ranging from 1- strongly disagree to 7 - strongly agree.

Measurement of satisfaction

Satisfaction is the consequence of the customer's experiences during various purchasing stages such as need arousal, information search, alternative evaluation, purchase decision, and post-purchase behavior (Kotler, Brown, & Armstrong, 2003). Satisfaction involves several emotions, and each emotion can be conceptualized in two dimensions,

pleasantness-unpleasantness, and low arousal-high arousal (Bagozzi, Gopinath, & Prashanth, 1999). On the side of emotional variables, satisfaction with a course is an important outcome that influences the decision to continue or drop-out of a course (Levy, 2007). The definition of overall satisfaction in this study is as an affective state representing an emotional reaction to the entire web-based learning experience. This definition focuses on the process evaluation associated with the purchase behavior. A scale with six items ($\alpha = .83$) adopted from Keaveney and Young (1997) was used. For the evaluation of the four individual perceived online qualities a scale with a single item developed by Westbrook (1980) was used. The reliability and validity were tested (DeShields, Kara, & Kaynak, 2005), and Cronbach reliability coefficients were all higher than the minimum cutoff score of 0.70 (Nunnally, 1978).

Measurement of Perceived usefulness

In this study, PU was defined as users' perceptions of the expected benefits of e-learning use. The scale items with Cronbach's α of 0.86 (Roca et al., 2006), was adopted from the studies of Roca et al. (2006). The three items measure students' benefits in terms of learning performance, learning effectiveness, and overall usefulness of online learning service. Each item was measured on a seven-point Likert scale, ranging from 1- strongly disagree to 7 - strongly agree.

Data Collection

The researcher collected data for six weeks from the beginning of May until the middle of June 2010. Before data collection, the Institutional Review Board (IRB) at Iowa State University approved of the questionnaire (Appendix A and Appendix B). Also, the researcher received permission of the study from the individual IRB offices of all participating universities as per the requirement of the ISU IRB office.

A pilot test was conducted to evaluate the clarity and ease of completion of the questionnaire. A total of 30 students comprised of undergraduate and graduate students

majoring in textiles and clothing and others at a mid-western university participated in the pilot study. The link to the web-survey was emailed to the graduate students, and hard copies of survey questionnaires with cover letters were distributed to undergraduate students by the researcher. Participants were asked to complete the questionnaire and provide comments about the content of questions and format. According to the comments and recommendations, a few minor revisions were made. For example, a brief explanation of online learning environment was introduced to the questionnaire.

The data was collected by an online survey because the online survey technique is very convenient and economical. An online survey was also used as the population of this study was likely to prefer an online survey. The data were collected via the Survey Monkey.com online survey system. In order to obtain the maximum percentage of questionnaire returns, the study adopted the technique suggested by Dillman and Salant (1994). It is known that an additional follow-up mailing can increase returns by approximately 12 to 15 percent (Heberlein & Baumgartner, 1978).

The researcher contacted thirteen hospitality program directors through e-mail (Appendix C) and by telephone. The thirteen hospitality programs include: University of Houston, North Texas, Oklahoma State University, Florida International University, South Carolina, Temple, Purdue, University Nevada, Las Vegas, Penn State University, Rochester Institute of Technology (RIT), Virginia Tech, and Kansas State University including Iowa State University. With the explanation of the purpose of the study, the researcher asked for program directors' commitment to participation. The email letter specified that the program directors could support the study by forwarding the invitation email to students or instructors that were/had been in charge of online classes. Among 13 programs that were contacted, eleven hospitality programs responded. Among 11 programs, four universities, such as Oklahoma State University, Temple University, Purdue University, and Kansas State University, informed that they did not offer any online course in hospitality programs during 2009 and 2010. Several programs informed that they have ever offered either in online or hybrid format before. The hospitality program in Purdue University informed that the program offered "Food Purchasing." RIT offered "Food Distribution" in online format. Kansas State University offered a number of online classes only in dietetic courses. Thus,

total six universities participated in the study, representing the population of four-year public hospitality programs.

Seven universities forwarded the web-survey link to students attending online courses in hospitality programs. In one university, questionnaires were collected on site when students came to campus to take the final exam. As such, data were collected through both Web-survey and paper-survey. During the recruitment process, students were informed that participation was voluntary and that the participants could withdraw at any time. To increase the response rate, the researcher sent friendly reminders (appendix D), stressing the importance of the online learners' participation in the study. The researcher offered an incentive for participation as well.

The data were collected from May until mid-June 2010 through both a convenience online sampling method (SurveyMonkey.com) and on-site survey. For the pilot study, 30 students, undergraduate and graduate, were asked to complete the questionnaire. After accepting the face validity of items in the questionnaire, the researcher contacted directors of hospitality programs and asked for their participation. The data analysis was conducted in five steps as follows:

1. Demographic statistics were examined to determine the respondents' characteristics.
2. A *t*-test and analysis of variance (ANOVA) were used to examine any significant difference among demographic characteristics in perceptions and in the overall level of college students' satisfaction with online learning.
3. A measurement model was tested using Confirmatory Factor Analysis (CFA). Five factors comprising e-service quality1, e-service quality2, satisfaction, e-loyalty, and perceived usefulness (PU) were used as the latent variables. The adequacy of the items was assessed by composite reliability, convergent validity, and discriminant validity.
4. To test the reliability and internal consistency of each factor, Cronbach's alpha of each factor was determined and the factors with alpha of 0.7 were retained for further analysis.
5. Once the measures were validated, SEM was used to test the validity of the

proposed model. SEM was used to examine the relationships among the five research constructs.

CHAPTER IV. RESULTS

This chapter describes results of the study. The researcher presents the demographic profile of the respondents and addresses the procedures used to examine the psychometric properties. The chapter focuses on data analyses to answer the research questions. The major purpose of the study was to examine the relationships among perceived quality, perceived usefulness, satisfaction, and loyalty, investigate the role of interaction in learning process, and determine the personal attributes influencing students' satisfaction.

Based on comments and suggestions from the pretest, the researcher improved the questionnaires in terms of clarification of wording and overall format before distributing to a larger group of study participants. Six hospitality programs participated in the study. A total of 300 students participated in this study; 29 questionnaires with significant levels of missing data were identified and removed from the study. Thus, the number of completed questionnaires was 271. The next section presents descriptive analyses of the participants and their characteristics followed by the psychometric properties of the measures.

Demographic Profiles of the Respondents

Participants in the study consisted of both undergraduate students and graduate students who had experienced or were taking an online course in hospitality programs during the period from spring 2009 to summer 2010.

The demographic characteristics of respondents in this study are exhibited in Table 4.1. More than half ($n=174$, 64.2%) were female students. Caucasian-Non-Hispanic ($n=188$, 69.4%) was the prominent ethnic group followed by Asian ($n=27$, 10%) and Hispanic ($n=27$, 10%). The most frequently occurring classification group was Senior ($n=109$, 40.2), followed by Junior (30%), Graduate (14.4%), Sophomore (11%) and Freshman (4%). The majority of respondents were in their 20s (53.5% of the respondents aged between 18-22 and 27.7% between 23-27) studying in full-time status ($n=240$, 88.6%).

Table 4.1.

Demographics of the Subjects (N=271).

Variable	Category	Frequencies	Percentage (%)
Gender	Female	174	64.2
	Male	96	35.4
	Unidentified	1	0.4
Age	18-22	145	53.5
	23-27	75	27.7
	28-32	19	7.0
	33-37	10	3.7
	38-42	9	3.3
	43 -47	5	1.8
	48 or more	5	1.8
	Unidentified	3	1.1
Ethnicity	Caucasian-Non-Hispanic	188	69.4
	Asian	27	10.0
	African American	17	6.3
	Hispanic	27	10.0
	Others	9	3.3
	Unidentified	3	1.1
Classification	Freshman	8	3.0
	Sophomore	31	11.4
	Junior	83	30.6
	Senior	109	40.2
	Graduate	39	14.4
Enrollment status	Part-time student	31	11.4
	Full-time student	240	88.6

Table 4.2 presents the characteristics of the participants. The sample represents online learners majoring in hospitality ($n=267$, 98.5%) over six different universities. In general, student respondents in the study belonged to a broad range in terms of their experience. About 30% ($n=80$, 29.5%) of the respondents reported that they took 8 or more online courses. About 50% of respondents ($n=121$, 44.4%) reported that they took more than five online courses. Only 14.8% of student reported that previously they experienced one online class in current hospitality programs. Half of the respondents ($n=144$, 53.1%) answered they devoted 2 to 4 hours per week. Only 13% of respondents reported less than 2 hours. The demographics and the characteristics of the respondents

in the study confirm that the sample profiles are close to the general online learner profiles. For example, previous studies reported that there were more female online learners than male learners (Allen & Seaman, 2007)..

Table 4.2.
Characteristics of the Sample (N=271).

Variables	Categories	Frequencies	Percentage (%)
Online courses experienced	1	40	14.8
	2	40	14.8
	3	36	13.3
	4	31	11.4
	5	24	8.9
	6	13	4.8
	7	4	1.5
	8 or more	80	29.5
	Unidentified	3	1.1
Average hours per week devoted	Less than 2 hours	37	13.7
	2 to 4 hours	144	53.1
	5 to 7 hours	45	16.6
	More than 8 hours	43	15.9
	Unidentified	2	0.7
University	University of North Texas	179	66.1
	University of Central Florida	41	15.1
	University of Nevada Las Vegas	22	8.1
	University of Houston	11	4.1
	Virginia Tech.	6	2.2
	Iowa State University	12	4.4
Major	No	4	1.5
	Yes	267	98.5

Note. Percentage total may not reach 100% because of missing values.

Measurement Model

Measures for each variable were drawn from previous studies to test the proposed model (see Table 3.1). Figure 11 in Chapter II represents the structural portion of the full structural equation model. For the model to be tested, it is necessary to establish the measurement portion of the structural equation model.

Exploratory Factor Analysis

Prior to conducting confirmatory factor analysis (CFA), the researcher conducted exploratory factor analysis to examine the dimensionality of the items. A principal axis factor (PAF) analysis with oblique rotation (Oblimin; $\delta = 0$) was carried out on the (43) items that comprise the proposed model using SPSS 13.0. Oblique rotation methods allow for factors to be correlated. Evaluation of the correlation matrix indicated that it was factorable. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .944 and Bartlett's Test of Sphericity ($\chi^2 = 8793.40$, $df = 1081$, $p < .001$) was significant, indicating that the correlation matrix was not an identity matrix, and all measures of sampling adequacy were deemed sufficient (i.e., $> .60$) (Pett, Lackey, & Sullivan, 2003).

To decide the number of factors and each item, the recommendation of Pett, et al. (2003) was considered. Thus, in the study, the value of all factor pattern coefficients was larger than .50 on at least one factor and items with factor pattern coefficients $< .30$ on more than one factor were dropped. The examination of the resulting scree plot, and eigenvalues greater than 1.0, and the level of factor loadings suggested seven factors to be retained. The seven factors extracted account for (72.5%) of the total variance in the items. Appendix E shows the final items obtained from EFA.

Confirmatory Factor Analysis

Thirty-four items confirmed from EFA were entered into confirmatory factor analysis (CFA). CFA was conducted to test the adequacy of the measurement model using Amos 18.0. Figure 12 shows the research measurement model. The adequacy of the measurement models was evaluated on the criteria of model fit, reliability, convergent validity, and discriminant validity of the seven factor.

Model fit

Maximum likelihood estimation was used to estimate the parameters, and a chi-square test was conducted to assess model fit. A non-significant chi-square result indicates a good model fit (Kline, 2005). However, because the chi-square test is affected by the sample size, the researcher needed to consider other goodness-of-fit index, such as the chi-square/degree of freedom ratio, the comparative fit index and the root-mean-square error of approximation.

For a good model fit, the chi-square value normalized by degrees of freedom ($\chi^2/d.f.$), should not exceed 3 and comparative fit index (CFI) should exceed 0.9, and root mean square error of approximation (RMSEA) should not exceed 0.08. In this study, PU3 was deleted since it loaded on multiple latent variables (PU, CS, and e-loyalty). LY25 was deleted since its squared factor loading was less than .5. In addition, this study improved the goodness of fit of the proposed model by using the modification indices (M.I).

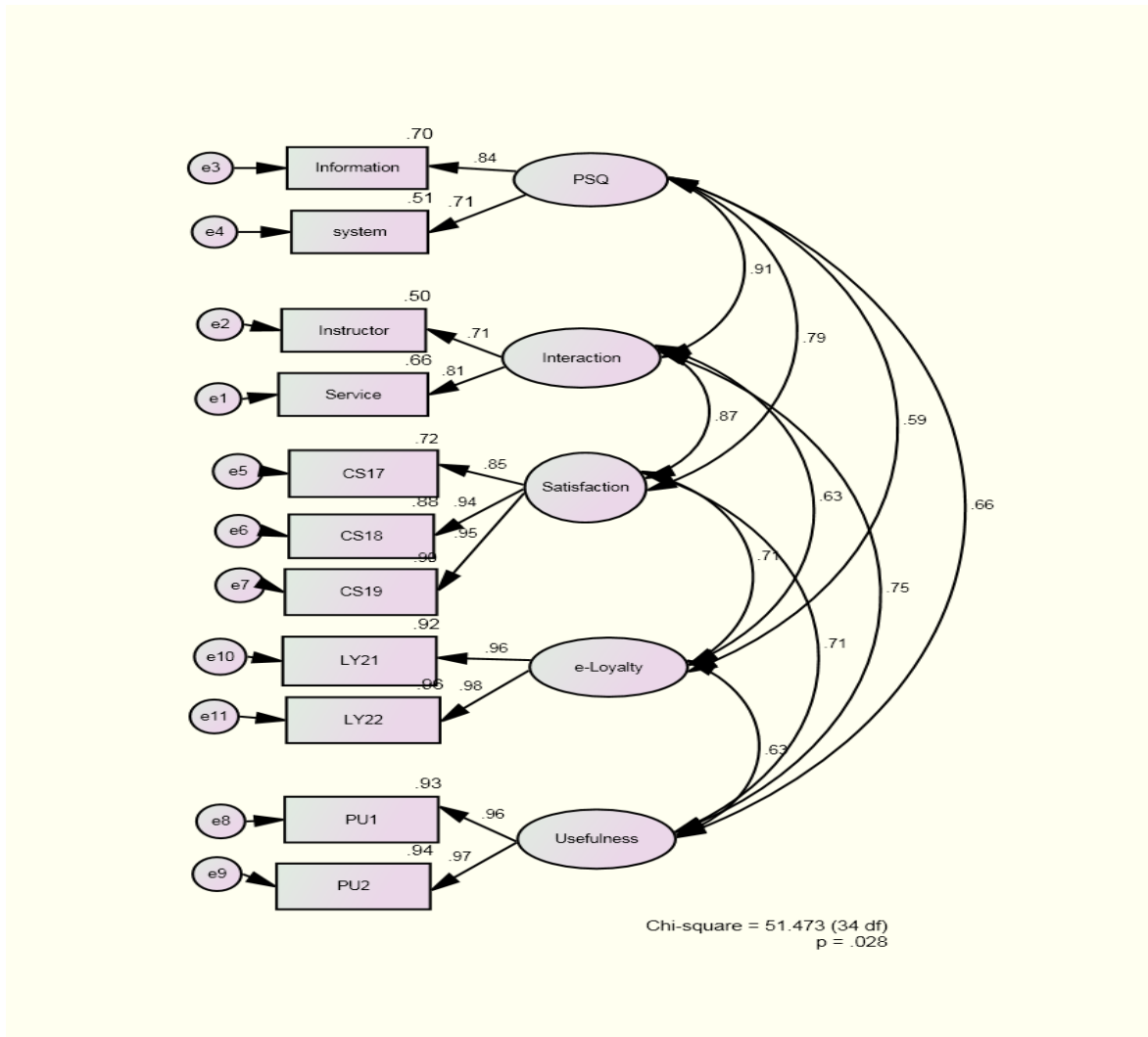


Figure 12. Measurement model

Finally, the CFA substantiated the hypothesized five-factor structure of the study. All model fit statistics given above fell within recommended standards. The chi-square was statistically significant (probability level = .028), χ^2/df 1.514 ($\chi^2 = 51.473$; $df = 34$), NFI was 0.982, CFI was 0.994, TLI was 0.990, and RMSEA was 0.044, suggesting adequate model fit. Table 4.3 summarizes the model fit.

Table 4.3.
Overall model fit statistics for the research model

Model	χ^2	df	χ^2/df	p	CFI	NFI	IFI	TLI	RMSEA
Model	51.47	34	1.5	0.028	.99	.98	.99	.99	0.04

The construct reliability

The construct reliability refers to the ability of observed variables to tap a similar underlying construct. It can be examined using the composite reliability values and the average variance extracted (AVE) (Fornell & Larcker, 1981). The composite reliability is calculated by use of the formula: Construct reliability = $(\sum \text{Standardized loadings})^2 / [(\sum \text{Standardized loadings})^2 + \sum \epsilon_j]$, where ϵ_j is the measurement error.

In the composite reliability, the actual factor loadings are taken into account instead of assuming each item is equally weighted in determining the composite. Criteria levels about .90 reflect a high level of consistency, and levels about .30 suggest an inadequate level of consistency. It is recommended that coefficient values of all items should be equal or more than 0.7 (Hair et al., 1998; Nunnally 1978). As shown in Table 4.4., all of them were above 0.73, indicating a commonly acceptable level for confirmatory research.

The average variance extracted (AVE) refers to the variance in the indicators explained by the common factor, in other words, the amount of variance captured by the measurement model versus the amount due to measurement error. It can be calculated by use of the formula: Average variance extracted (AVE) = $\sum (\text{Standardized loadings})^2 / [\sum (\text{standardized loadings})^2 + \sum \epsilon_j]$.

Convergent validity

Convergent validity was evaluated for measurement scales using two criteria suggested by Fornell and Larcker (1981). According to them, all indicator factor loadings should be significant and exceed 0.70, and average variance extracted (AVE) for each

construct should exceed 0.50. As shown in Table 4.4., all the factor loadings for latent constructs were significant ($p < .001$). Most items exhibited loading higher than 0.73 on their respective construct, providing evidence of acceptable item convergence on the intended constructs. AVE ranged from 0.58 to 0.93, greater than the variances due to measurement errors. Thus, conditions for convergent validity were essentially met.

Discriminant validity

Fornell and Larcker (1981) suggested that for satisfactory discriminant validity, the square root of the AVE from a construct should be greater than the correlation shared between the construct and other constructs in the model. Details of the measurements and correlations between study constructs are shown in Table 4.4. and Table 4.5. respectively. In Table 4.5 the diagonal values exceed the inter-construct correlations: hence the test of discriminant validity is acceptable. Therefore, it is possible to conclude that the construct validity of the measurement scales is sufficiently high.

Descriptive Statistics and Normality Test

Descriptive statistics

The mean values over seven constructs ranged from 3.74 (most negative evaluation) to 5.89 (most positive evaluation). As indicated in Table 4.6, all seven variables had means at or above 5, suggesting that students are positive in online learning service quality and satisfied with it. Table 4.7. includes mean ratings on a 7-point Likert-scale (1= Strongly Disagree to 7= Strongly Agree) for the construct. Scales scores of the four dimensions of perceived service quality were calculated by summing up the ratings for the statements in that dimension. Students perceived the dimensions of information quality to be the most evident of the four dimensions and the service interaction to be the least. The correlations among the seven variables in this research ranged from .476 to .795. The Pearson correlation indicated that the seven constructs were highly correlated yet distinct constructs. In

particular, students' online learning satisfaction was significantly related to perceived usefulness ($r = .687, p < .001$) and students' perceived quality such as information quality ($r = .665, p < .001$) and service interaction ($r = .693, p < .001$). As numerous studies indicated, online learning satisfaction was significantly associated with online learning loyalty ($r = 0.795, p < .001$). Table 4.6. presents the bivariate correlation coefficients between factors.

Table 4.4.
Confirmatory Factor Analysis Result for Hypothesized Model (N= 270)

Constructs	Standardized Regression Weight	Squared Factor Loadings	Composite Reliability	AVE	Disposition
Recommendation value	>.7	>.5	>.7	>.5	Retain /Remove
1PSQ			75%	0.61	
Information	.839	0.704		0.70	Retain
System	.712	0.507		0.50	Retain
2PSQ			73%	0.58	
Instructor	.709	0.503		0.50	Retain
Service	.813	0.661		0.67	Retain
CS			94%	0.83	
CS17	.849	0.721			Retain
CS18	.937	0.878			Retain
CS19	.949	0.901			Retain
e-Loyalty			90%	0.73	
Ly21	.961	0.924			Retain
LY22	.981	0.961			Retain
Usefulness			96%	0.93	
PU1	.963	0.927			Retain
PU2	.968	0.936			Retain

Table 4.5

Correlations of Latent Variables and Discriminant Validity (N=271)

Construct	Mean	SD	1	2	3	4	5	6	7
1. Instructor	5.19	1.19	(0.71)						
2. Service	5.11	1.18	.605	(0.82)					
3. Information	5.66	1.01	.636	.625	(0.83)				
4. System	5.55	0.99	.537	.554	.630	(0.71)			
5. PU	5.01	1.45	.516	.644	.537	.476	(0.96)		
6. CS	5.20	1.32	.639	.693	.665	.513	.687	(0.80)	
7. e-Loyalty	5.62	1.39	.506	.588	.567	.529	.634	.795	(0.80)

Note. Diagonal elements (in bold) are the square root of the average variance extracted (AVE). Off-diagonal elements are the correlations among constructs.

Table 4.6.

Descriptive Statistics and Correlations of each Construct (N =270)

Construct	Mean	S.D.	Correlation		
			PU	CS	e-Loyalty
Independent variables					
Information	5.66	1.01	.537	.665	.567
System	5.55	0.99	.476	.513	.529
Service	5.11	1.18	.644	.693	.588
Instructor	5.19	1.19	.516	.639	.506
Mediated variable					
PU	5.01	1.45	1.	.687	.634
CS	5.20	1.32	.687	1	.795
Dependent variable					
e-Loyalty	5.62	1.39	.634	.795	1

Note. *** $p < .001$, ** $p < .01$, or * $p < .05$.

Table 4.7

Descriptive Statistics of the Variables in the Proposed Model (N =270)

Theoretical constructs	Mean	S.D.
Perceived Infrastructure Quality (IPSQ)		
System Quality ($\alpha =.935$)	5.55	.999
1. I find the online learning (OL) system i.e., Web CT easy.	5.83	1.083
2. My interaction with the OL system is clear and understandable.	5.80	1.141
3. I find the OL system easy to navigate.	5.78	1.181
4. I find the OL system easy to use.	5.83	1.138
5. The OL system has an attractive appearance.	4.98	1.516
6. The site has fast browsing speed.	5.14	1.406
7. The design is appropriate for the type of OL system.	5.61	1.165
8. The OL system conveys a sense of competency.	5.53	1.192
9. The OL system creates a positive experience for me.	5.46	1.332
Information Quality($\alpha= .936$)		
10. OL hospitality course provides accurate information (i.e., grade).	5.78	1.093
11.good information content supporting the course goal.	5.77	1.041
12.timely information (i.e., feedback).	5.69	1.128
13.relevant information for me to master course content.	5.61	1.257
14.easy- to- understand information.	5.62	1.299
15.information at the right level of detail.	5.49	1.293
16.information in an appropriate format.	5.64	1.174
Perceived Interaction Quality (2 PSQ)		
Service Interaction Quality [$\alpha= .90 (.90)$]		
17. The online course has a good reputation.	5.35	1.259
18. I feel connected and comfortable in transaction.	5.00	1.517
19. I feel secure about the confidentiality of my personal information	5.63	1.204
20. The online course creates a sense of personalization	4.84	1.566
21. Online course conveys a sense of learning community.	4.81	1.540
22. The online course makes it easy for me to communicate my needs.	5.02	1.537
23. I feel confident that the online teaching process will be delivered.	5.38	1.265
Instructor Interaction Quality [$\alpha= .85 (.83)$]		
24. I could easily get in contact with my online instructor.	5.52	1.358
25. Instructor had a high level of expertise in the implementation	5.46	1.379
26. My instructor gave fast feedback via a variety of communication	5.36	1.435
27. My instructor supported and counseled me.	5.01	1.630
28. Possibility to establish personal contact with the instructor is low (REVERSED).	3.74	1.767

Table 4.7 (continued)

Theoretical constructs	Mean	S.D.
29. My instructor frequently offered opinions to students.	4.95	1.469
30. My instructor frequently asked the students questions.	4.79	1.581
Perceived Usefulness (PU) [$\alpha = .96 (.95)$]		
31. Using the OL service can improve my learning performance.	5.01	1.449
32. Using the OL service can increase my learning effectiveness.	5.00	1.508
33. I find the OL service to be useful to me.	5.25	1.541
Online learning Satisfaction (CS) [$\alpha = .93 (.93)$]		
34. The OL program in our department compares favorably to other.	4.90	1.227
35. I am generally satisfied with the quality of OL course(s).	5.24	1.388
36. I feel I am getting my money's worth from the OL program.	5.04	1.578
37. Overall, the quality of the online learning course(s) offered by our department is excellent.	5.18	1.466
38. Overall, I am very satisfied with the OL course(s) in our department.	5.22	1.471
39. Overall, I am satisfied with the faculty of the OL course(s).	5.32	1.415
Online Learning Loyalty (e-Loyalty) [$\alpha = .97 (.92)$]		
40. I am likely to take an online course again from the current hospitality program.	5.53	1.721
41. I am likely to take another online course that is provided by this hospitality program.	5.65	1.641
42. I will recommend other people to take online courses from this hospitality program.	5.44	1.714
43. I will say positive things to other people about the services provided at this hospitality program.	5.56	1.562
44. I intend to continue the relationship with this hospitality program rather than discontinue (i.e., alumni org.).	5.89	1.348

Note. Alpha values (in parentheses) are the alpha values of all items that entered EFA.

Normality Test

Descriptive statistics of seven continuous variables are presented in Table 4.8. The table includes mean, standard deviation, and skewness indices for accessing normality of variables. To insure that the data met the normality assumptions, residual Q-Q plots (see Figure 13), histogram with normal curve of residual (see Figure 14) were examined as well

as plotting studentized residual with identification and standardized predicted value with standardized residuals (see Figure 15 and Figure 16). Multi-collinearity was assessed using tolerance, variance inflation factor (VIF), and condition index.

The normality of the variables was examined in terms of skewness and kurtosis. “Skewness” is a reflection of the symmetry of the distribution. “Kurtosis” is a measure of the amount of data in the tails as opposed to the central part of the distribution. The criterion used for cut-off point was 3 (Hair et al., 1998). As shown in the Figure 15, the dispersion of scatter plot does not form a diamond or triangle shape, exhibiting constant variance of the error terms among the independent variables. As shown in Figure 14 data in this study is slightly left skewed, however, overall, it looked acceptable level so that proposed variables in this model met the normality assumptions.

Multicollineratity among variables was assessed using tolerance value and inflation factor. Tolerance is the amount of variability of the selected independent variables not explained by the other independent variables (Hair et al., 1998) and VIF is the inverse of the tolerance value ($VIF=1/tolerance$). Therefore, small tolerance values (less than 0.1) and large VIF values (10 or higher) denote high multicollinearity. The given data set yielded tolerance ranging from 0.4 to 0.6 and VIF ranging from 1.77 to 1.89, suggesting low possibility of existence of multicollinearity in the regression among independent variables.

Table 4. 8.

Result of Normality Test of Proposed Variables

	<i>N</i>	<i>Mean</i>	<i>S. D.</i>	<i>Kurtosis</i>
Information	270	5.67	.97	.239
System.	270	5.56	.96	.775
Service interaction	270	5.12	1.17	.499
Instructor interaction	270	5.19	1.18	.693
PU	270	5.09	1.42	.526
CS	270	5.20	1.31	.333
e-Loyalty	270	5.62	1.38	.297

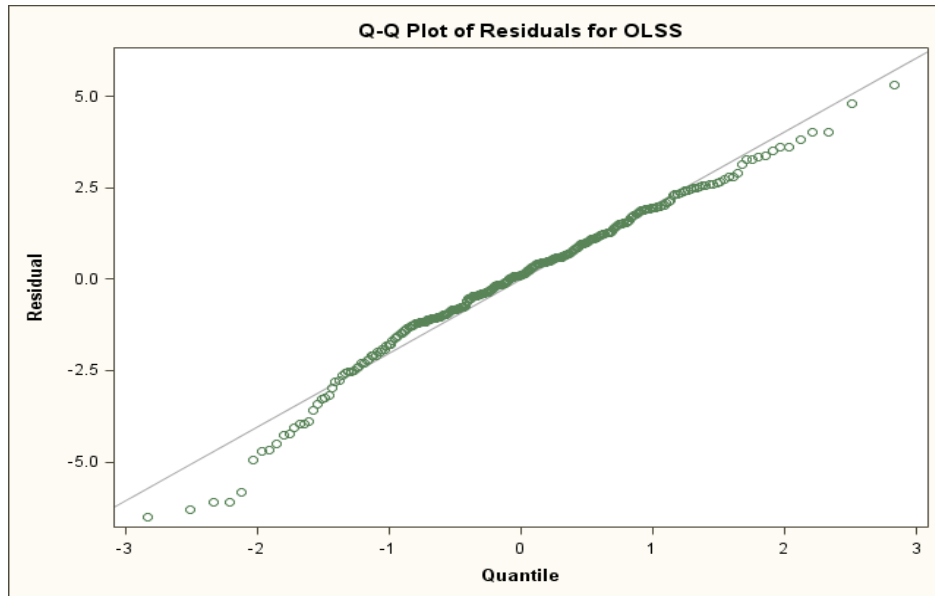


Figure 13. Normal Q-Q plot of studentised residual

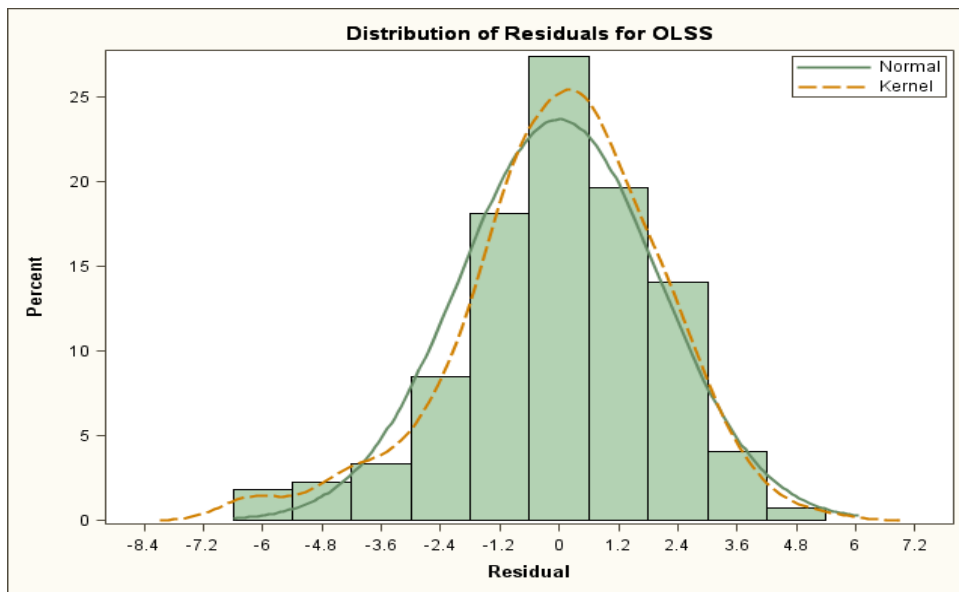


Figure 14. Residual histogram with normal curve

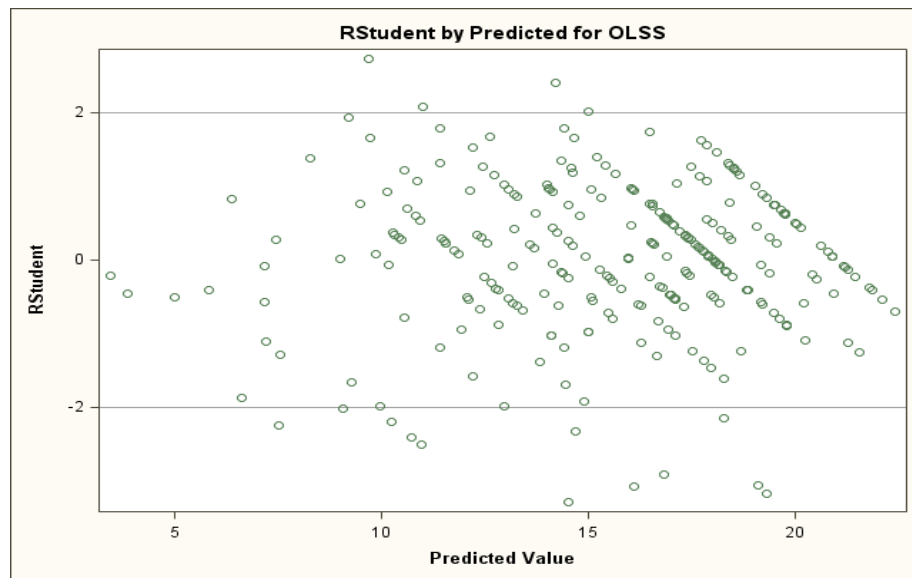


Figure 15. Studentised residual by predicted value

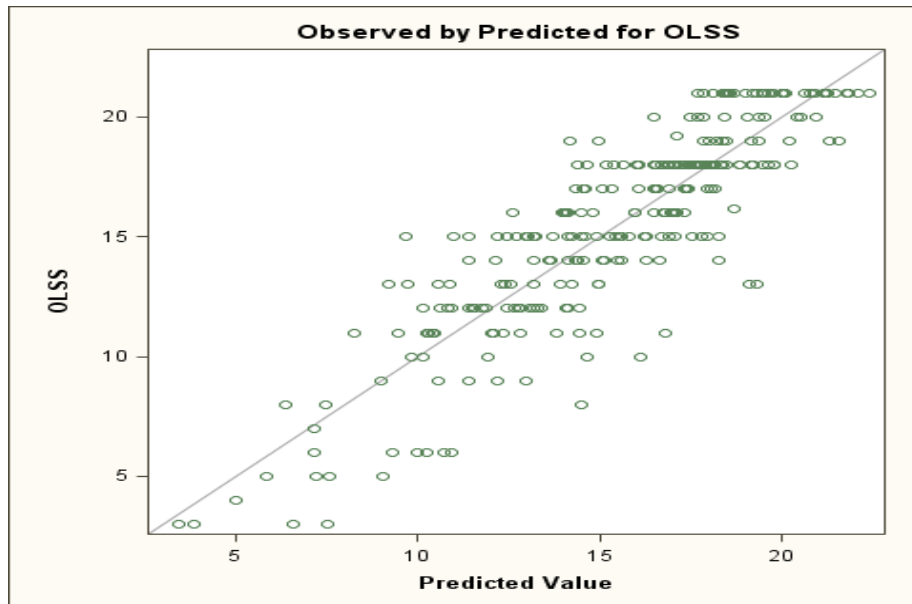


Figure 16. Observed value by predicted value

Structural Model Analysis and Hypotheses.

What are the factors that affect students' adoption of an online learning course? What are the relationships among online perceived service quality, perceived usefulness, online satisfaction, and e-loyalty? In order to answer the questions, this study proposed a model (see Figure 17) depicting five hypotheses concerning e-service quality, perceived usefulness, satisfaction, and e-loyalty in the context of online learning as follows:

- H1: Students' satisfaction positively affects student loyalty.
- H2: Student's perception of online learning quality (2PSQ) reflecting the instructor and service interaction positively affects student satisfaction.
- H3: Students' perception of online learning quality reflecting the information and system positively affects their perception about interaction quality.
- H4: Students' perception of online learning quality reflecting the interactions (2PSQ) positively affects perceived usefulness.
- H5: Perceived usefulness positively affects student satisfaction.

SEM is a comprehensive statistical approach to testing hypotheses about relationships among observed and latent variables (Hair et al., 1998). In SEM, a structural model relates to the causal interrelationships of the latent variables while the measurement model shows the statistical relationship between the latent and observable variables. Once the measurement model that best explains the relationships has been identified, the structural model is estimated. Using the Windows versions of Statistical Package for Social Sciences (SPSS 16.0) and AMOS (Analysis of Moment Structures release 6.0), the result of structural equation modeling was summarized in Table 4.9. and Figure 18.

Goodness of Fit. The overall fit and the strengths of the hypothesized paths were examined. E-service quality (e-PSQ) was divided into two concepts as was confirmed in the measurement model. It was to examine the role of interaction in the e-PSQ. As shown in Table 4.9, The overall fit indices evidenced good support for the final model fit indices: A χ^2

to degrees of freedom ratio of 1.60 ($\chi^2 = 1284$; $df = 801$), AGFI = 0.80, NNFI = 0.94, CFI = 0.95, and RMSEA = 0.046. Hence, this model fitted the data reasonably well.

Furthermore, evidence of misfit was captured by the modification indices (MI's) in AMOS 5.0. The MI's, as a part of the output, suggested that a path from perceived usefulness to e-loyalty (PU \rightarrow E-loyalty) should be added. The model was modified and examined accordingly. Figure 19 shows the final model after the adjustments. Table 4.9 presents the summary of fitting results for both the initial as well as the revised best fitting models.

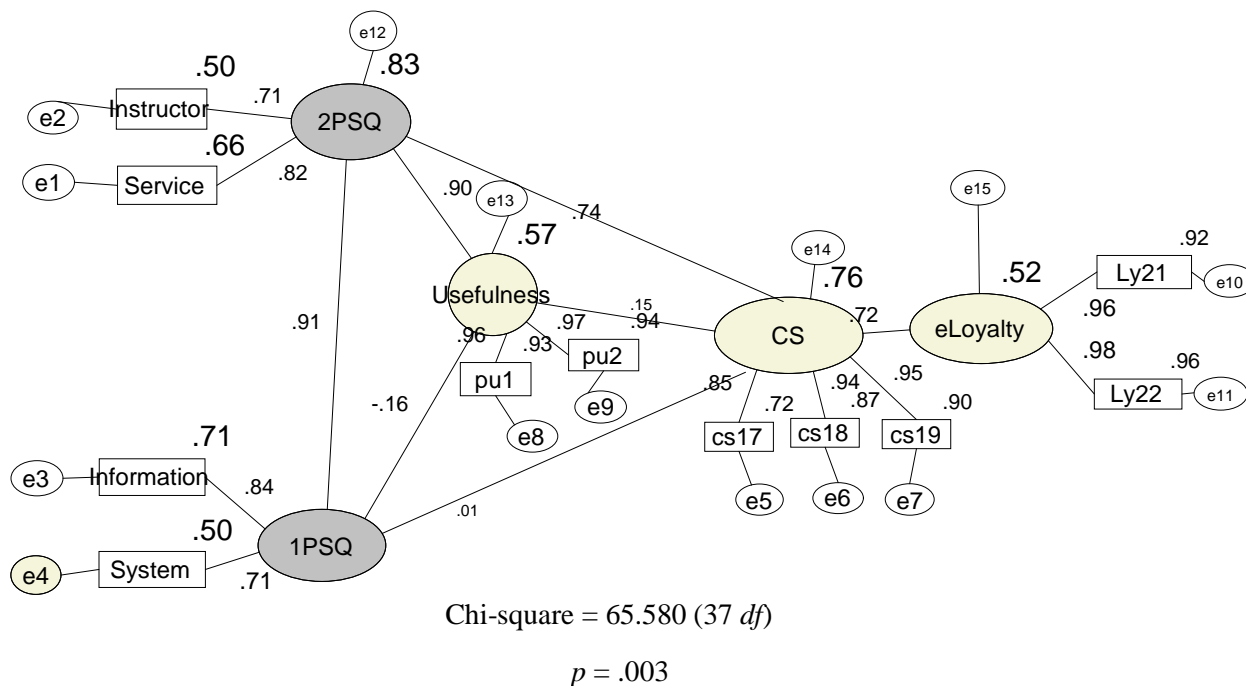
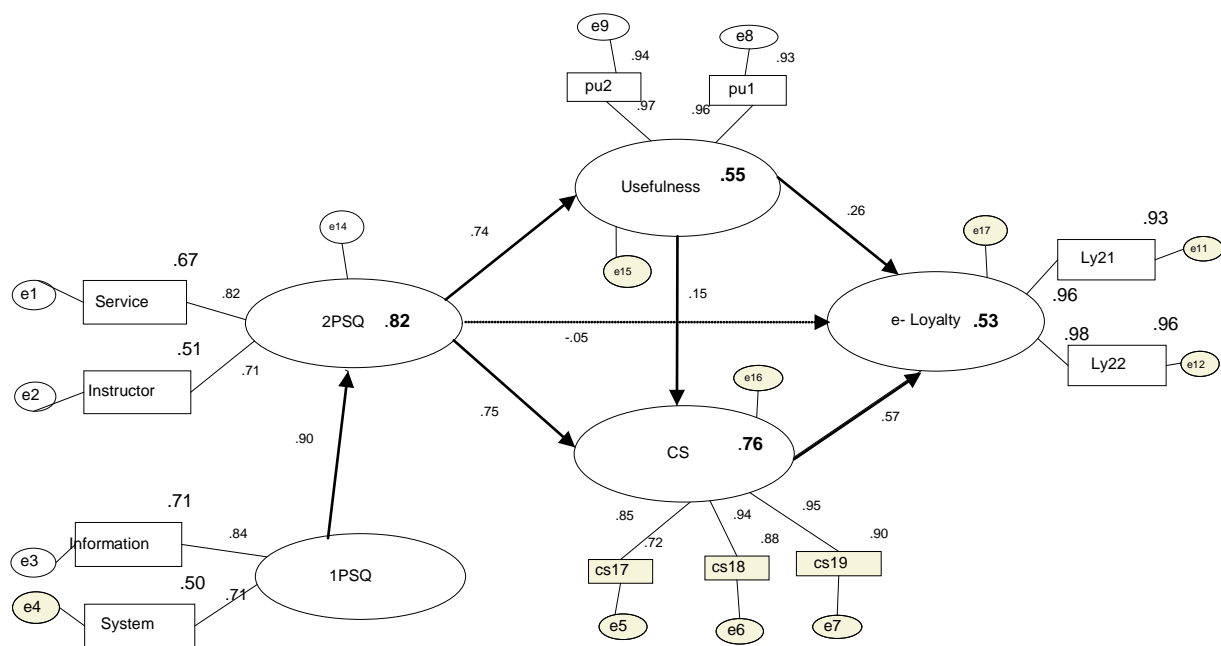


Figure 17. Initial SEM model



Chi-square = 52.611 (37 df)
 $p = .046$

Figure 18. Results of testing the hypothesized model

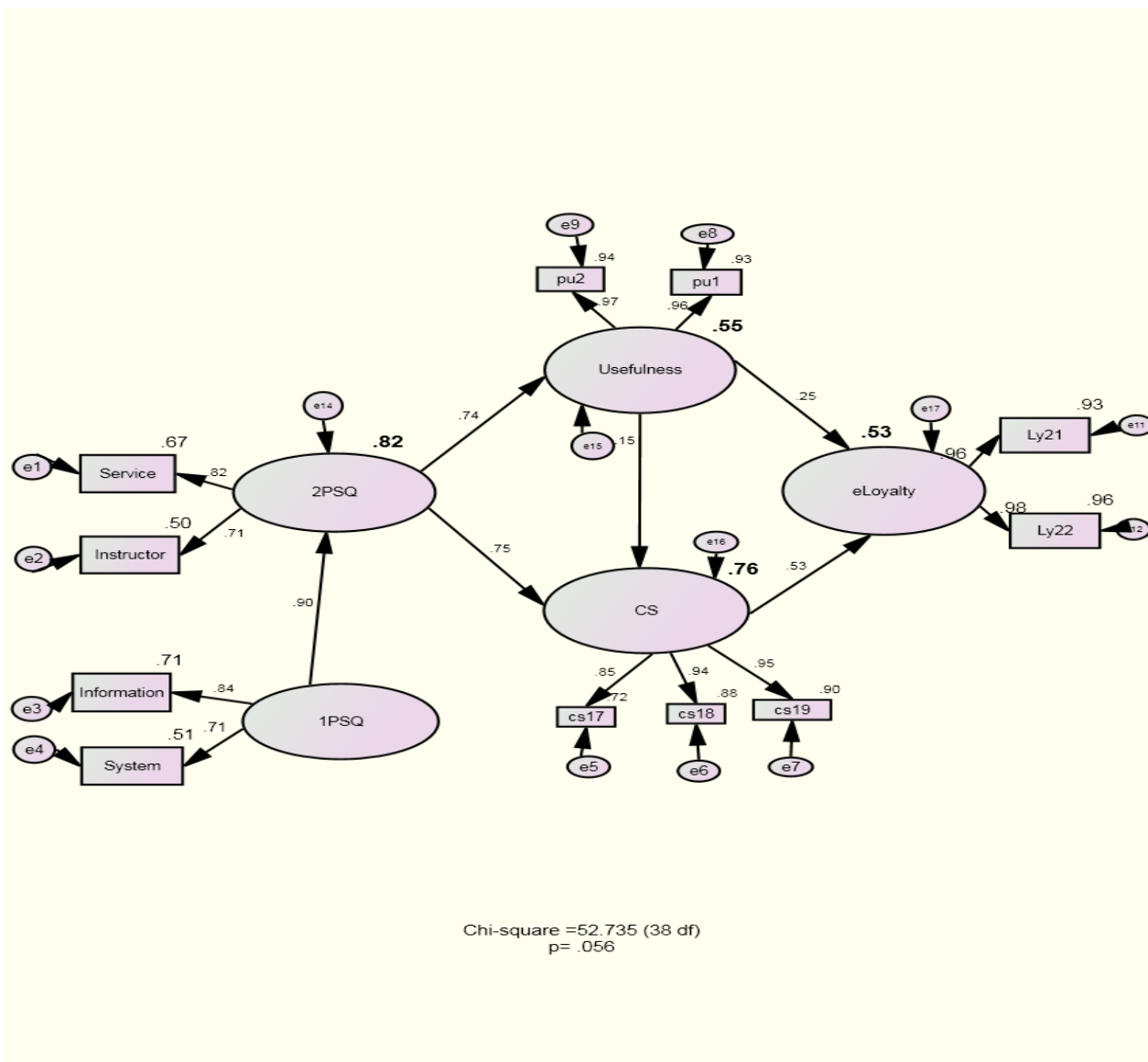


Figure 19. Final proposed model

Table 4.9.

Overall Goodness-of-Fit Comparisons for the specified Model

Model	χ^2	df	χ^2/df	p	CFI	NFI	IFI	TLI	RMSEA
Initial Model	65.58	37	1.77	0.003	.990	.978	.990	.985	0.054
Final Model	52.73	38	1.46	0.056	.995	.981	.994	.991	0.038

Testing of Hypotheses

As shown in Figure 19 satisfaction ($\beta = 0.53, p < 0.001$) and perceived usefulness ($\beta = 0.26, p < 0.001$) are strong predictors of loyalty. Therefore, H1 and H2 are supported. The effect of usefulness on satisfaction ($0.15, p < .001$) was supported, validating H3. 2PSQ comprising service interaction and instructor interaction had a strong effect on satisfaction ($\beta = 0.75, p < 0.001$) However the effect of 1PSQ comprising information quality and system quality on satisfaction was not supported (see Figure 17 and Figure 19). 1PSQ predicted satisfaction through 2PSQ, which is the dimension of interaction. The interaction dimension strongly influenced perceived usefulness ($\beta = 0.74, p < .001$) thus, H5 was supported. It is noticeable that service interaction was the most influential predictor of 2PSQ (perceived interaction quality) and information was the most influential predictor of the 1 PSQ, which reflect information quality and system quality. The hypothesis testing results are summarized in Table 4.10. Figure 16 presents the relationship of paths in the research model.

In general, both e-1PSQ and e-2PSQ had only an indirect effect on e-loyalty through (a) perceived usefulness (via Hypotheses 4 and NEW) and (b) student satisfaction (via Hypotheses 3 and 4). Table 4.11 exhibits the total, direct, and indirect effects of the observed variables on the latent variables. Cohen (1988) stated that the total effects greater than 0.8 can be said to be of large effect while those in the 0.2 to 0.5 range can be said to be small.

Amount of variance explained by the proposed model

Based on squared correlation (R^2), for perceived usefulness, the amount of variance explained by 2PSQ was 0.55. For student satisfaction, the amount of variance explained by 2PSQ was 0.76. Finally, for e-loyalty, the amount of variance explained by 2PSQ, PU, and student satisfaction was 0.53. The examination of direct and indirect effects on perceived usefulness, satisfaction and e-loyalty revealed that 1PSQ strongly influenced these three construct indirectly. Thus, the result of the study implies the importance of 1PSQ. Overall, the proposed structural model was supported in its explanation of how students can be satisfied and retained in online learning course of the hospitality discipline. The result of the testing hypothesis had a similar one when the two e-PSQ constructs were combined on the proposed model as shown in Figure 18. In summary, a high level of perceived service quality

leads to students' satisfaction with online learning course, which in turn, has positive and significant effect on retention. The findings are consistent with those of previous studies (Roca et al. 2006; Chiu 2005 et al.).

Table 4.10.
Hypotheses Test Results

Research Hypothesis	Path	Standardized Path Coefficient (β)	<i>t</i> -value	Results
H1	CS→ e-Loyalty	0.54***	7.89	Supported
H2	2PSQ→CS	0.75***	8.90	Supported
H3	1PSQ→2PSQ	0.90***		Supported
H4	2PSQ→PU	0.74***	12.08	Supported
H5	PU→ CS	0.15*	2.12	Supported

Note: Note. * $p < .05$, ** $p < .01$, or *** $p < .001$,

Table 4.11.
Examining Effects on On-line Loyalty

Effect	Direct	Indirect	Total	R^2
On 2PSQ (Interaction) of 1PSQ	0.90***	0.00	0.90***	0.82
On Perceived Usefulness Of 1PSQ	0.00	0.67***	0.67***	0.55
Of 2PSQ	0.74***	0.00	0.74***	
On Online Satisfaction Of 1PSQ		0.78***	0.78***	0.76
Of 2PSQ	0.75***	0.11***	0.87***	
Of Perceived Usefulness	0.15*	0.00	0.15*	
On Online Loyalty Of 1PSQ	0.00	0.57***	0.57***	0.53
Of 2PSQ	-0.04	0.68***	0.64***	
Of Perceived Usefulness	0.26***	0.086	0.34***	
Of Online Satisfaction	0.57***	0.00	0.57***	

Mediation effect of perceived interaction quality and student satisfaction

An initial test was performed on the initial model depicted in Figure 17. As suggested in the confirmed measurement model, e-1PSQ and e-2PSQ were highly correlated. 1PSQ strongly predicted e-2PSQ. Interestingly, initial model revealed that e-1PSQ has not shown the significant relationships with perceived usefulness ($\beta = -.162, t = -.601$) and customer satisfaction ($\beta = .013, t = .045$), whereas e-2PSQ showed positive and significant relationship with perceived usefulness ($\beta = .901$) and student satisfaction ($\beta = .742$).

Further analysis of the initial model revealed e-2PSQ played as a mediator between e-1PSQ and student satisfaction (see Figure 4.3). When the paths from e-1PSQ to interaction was constrained to zero, the effect of e-1PSQ on student satisfaction was significant at $p < .001$ ($\beta = .42, t = 5.970, p < .001$). However, when interaction was added as a mediator in the model, the effect of e-1PSQ on student satisfaction was no longer significant ($\beta = -.06, t = -.176, p > .05$) and the model fits showed significant chi-square difference $p < .001$; $\Delta\chi^2(1) = 174.9$. Thus, 2PSQ played a full mediating role between 1PSQ and e-loyalty.

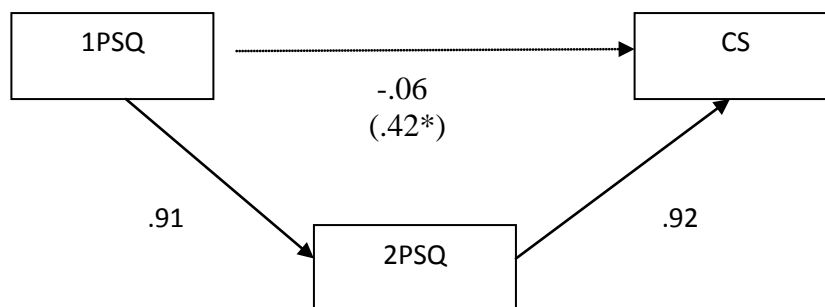


Figure 20. Path diagram of mediation effect of 2PSQ

Further analysis of the structure model exposed that perceived usefulness and student satisfaction played a mediating role between e-PSQ and e-loyalty. For example, when the

paths from 2PSQ to satisfaction was constrained to zero, the effect of 2PSQ on e-loyalty was significant ($\beta = 0.13$, $t = 2.50$, $p < .05$). However, when satisfaction was added as a mediator in the model, the effect of e-PSQ on e-loyalty was no longer significant ($\beta = 0.08$, $t = 0.62$, $p < .05$) and the model fits showed significant chi-square difference at $p < .001$; $\Delta\chi^2(1) = 237.74$. Thus, student satisfaction played a full mediating role between e-PSQ and e-loyalty. Figure 18 shows the mediation effect of satisfaction between perceived quality and e-loyalty.

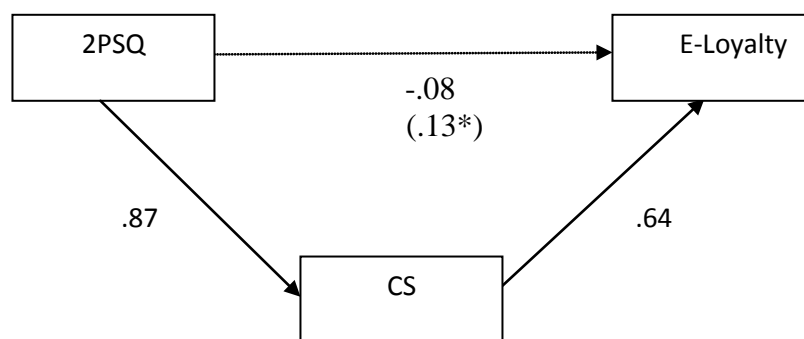


Figure 21. Path diagram of mediation effect of CS

Personal attributes and proposed variables

One-way analysis of variance (ANOVA), with *post hoc* tests, was conducted to find whether the four sub-scales of online course quality, perceived usefulness, satisfaction, e-loyalty were different based on demographic characteristics of the students (i.e., ethnicity, classification, age, hours devoted). No differences were found among ethnicity, classification, age, and hours devoted ($p < .05$). A *t*-test was conducted to find whether these seven subscales differed by gender. There was a significant difference between males and females on the perception of information quality; females were found to report higher information quality than males (see Table 4.12 and Table 4.13).

Gender

The only one sub-scale (information quality) of online course quality was significant in gender difference when a *t*-test was used. On average, female had a higher total score ($M = 5.75$, $SD = 0.95$, $n=173$), than males ($M = 5.51$, $SD = 0.96$, $n=96$) on perceived information quality and this difference was significant. There was no significant difference between different genders on perceptions of usefulness, student satisfaction, and e-loyalty (see Table 4.12.). The result for students' satisfaction with online learning was consistent with the studies from Mark et al. (2005) and Levy (2007).

In the perspective of descriptive analysis, Table 4.12 shows that female participants in the study appeared to be more positive than male students toward online learning since female students gave higher mark on information ($M=5.75$), usefulness ($M=5.06$), student satisfaction ($M=5.23$) and e-loyalty ($M=5.70$). Also, it is interesting to notice that female students gave lower score than male students on the interaction (2PSQ) such as service interaction and instructor interaction. The findings are consistent with the findings from Young & Norgard (2006). It may imply that females are inclined to think online courses perform well compared to males. It seems female students feel stronger than do male about the needs for interaction with instructors (Young & Norgard, 2006).

Age and Classification

The findings (Table 4.12.) indicate that there were no statistical differences in the online learners' satisfaction and e-loyalty within different age groups. Although finding of the study related to students' perception of quality and satisfaction with online learning were contradictory to the finding from several studies (Frederickson et al., 2000; Swan et al., 2002; Yang & Cornelius, 2004), the result was consistent with Levy (2007) and Marks et al., (2005).

Freshman scored higher than any other school year group on the research variables. Nonetheless, the groups with higher range of age tended to evaluate the online course performance higher than groups with lower range of age. The results in descriptive analysis are similar to those of previous research (Chen, 2006; Miyazoe, Chiyodaku, & Anderson, 2010).

Older students in this study showed a higher mean level of self-efficacy and enjoyment toward the online course in hospitality. The intrinsic value of the age group of 43-47 ($M=5.87$, $SE=0.83$) and 48 and more ($M=5.93$, $SE=1.36$) were higher than 18-22 ($M=4.5$, $SE=1.49$) and 23-27 ($M=4.4$, $SE=1.5$) and the difference was significant at the significance level of < 0.05 . Interestingly, according to further investigation of LSD, the age group of 23-27 ($M=4.84$, $SE=1.71$) differed with those of 18-22 ($M=5.54$, $SE=1.37$), $p < 0.001$, and 38-42 ($M=6.2$, $SE= .66$), $p < 0.01$.

Students' online learning engagement in one online program per week

There was no significant differences among different groups of learners' previous online learning engagement on satisfaction score, $F(3, 265) = 1.347$, $p = 0.28$). The results were contradictory to suggestions from several studies (Bernard et al., 2004; Mark, et al., 2005; Yang & Cornelius, 2004).

However, students' perception of the quality of online course may have a positive impact on the outcome of learning since students who were highly positive about the online course quality devoted more time than students in any other group. In descriptive statistics shows that respondents who reported they devoted more than 8 hours gave very positive scores on online course quality as well as on usefulness. This student group who devoted more than 8 hours was also distinct in that they gave high scores on their satisfaction and e-loyalty.

The result of one-way ANOVA showed there was significant differences among different groups of learners' previous online learning engagement on enjoyment score, $F(3, 265) = 4.333$, $p = 0.05$). Students who reported that online learning was interesting, enjoyable or fun turned out to spend more time on online learning. Students who reported devoting 8 hours or more ($M=5.15$, $SD=1.37$, $n=43$) showed high intrinsic value compared to those of devoting less than 2 hours ($M=3.95$, $SD=1.44$, $n=37$) $p < 0.0001$ and those of spending 2 to 4 hours ($M=4.56$, $SD=1.47$, $n=144$) and 5 to 7 hours ($M=4.50$, $SD=1.62$, $n=45$) $p < 0.05$.

Students' previous online learning experience

The findings indicated that there was no significant differences among different groups of students' previous experience on both satisfaction scores, $F(7, 259) = .426, p = .885$ and e-loyalty scores, $F(7, 259) = 1.009, p = .425$. The result for students' satisfaction was consistent with the finding of previous studies (Hong, 2002; Marks et al., 2005; Artino, 2008).

Table 4.12.

Summary of the t-test for the Proposed Variables by Gender.

Variables	Gender	Mean +SD	<i>t</i>	<i>p</i>
Information quality	Male	5.51 ± .96	0.220	0.049*
	Female	5.75 ± .95		

Scale: 1= Strongly Disagree to 7 = Strongly Agree

* $p < 0.05$

Motivational beliefs and other factors that influence satisfaction

One of the research goals of the study was to identify the student characteristics that contribute to students' satisfaction. Variables depicting students' motivational factors and resource ability were entered to regression analysis along with all proposed variables on relationship models. In other words, compatibility, flexibility, enjoyment, PBC, achievement, confirmation, self-efficacy, as well as the four sub-scales of e-perceived service quality, perceived usefulness were entered into regression analysis. Significant factors predicting students' satisfaction turned out to be Confirmation ($\beta = .43, p < .001$), Compatibility ($\beta = .24, p < .001$), Enjoyment ($\beta = .17, p < .001$), Service Interaction ($\beta = .15, p < .001$), Instructor Interaction ($\beta = .12, p < .001$), and Information Quality ($\beta = .10, p < .03$). (see Table 4.14 and Table 4.15).

Table 4.13.

Comparison of Proposed Variables Based on Demographic Profiles

Demographic Variable	Information	System	Service	Instructor	PU	CS	e-Loyalty
Gender							
Male	5.5	5.5	5.2	5.2	4.9	5.1	5.5
Female	5.7	5.6	5.1	5.1	5.1	5.2	5.7
<i>t-test</i>	0.049*	0.49	0.54	0.95	0.35	0.54	0.18
Age							
18-22	5.77	5.60	5.12	5.15	5.00	5.27	5.78
23-27	5.40	5.44	5.06	5.18	4.94	5.11	5.41
28-32	5.66	5.88	5.28	5.29	5.41	5.31	5.53
33-37	5.80	4.97	4.98	5.01	4.45	4.96	4.88
38-42	5.97	5.73	5.26	5.67	5.78	5.27	6.31
43-47	6.08	5.89	5.17	5.53	5.30	5.36	5.89
48 or more	6.14	6.09	5.93	5.80	5.60	5.72	6.08
<i>F-test</i>	1.83	1.58	0.60	1.76	1.15	0.29	1.65
Hour devoted							
Less than 2	5.62	5.59	4.70	4.77	4.82	4.68	5.23
2-4	5.62	5.45	5.10	5.10	5.05	5.28	5.77
5-7	5.72	5.54	5.00	5.00	4.97	5.13	5.52
8 and more	5.83	5.63	5.00	5.13	5.07	5.14	5.62
<i>F-test</i>	0.436	0.33	0.91	0.59	0.22	0.25	0.30
Classification							
Freshman	5.84	5.71	5.31	5.60	0.75	5.57	6.33
Sophomore	5.73	5.37	4.93	4.90	4.55	5.12	5.60
Junior	5.74	5.63	5.20	5.29	5.00	5.31	5.89
Senior	5.65	5.60	5.14	5.18	5.15	5.24	5.50
Graduate	5.53	5.48	5.06	5.22	4.96	4.96	5.37
<i>F-test</i>	0.44	0.59	0.33	1.29	1.61	0.72	1.89

* $p < .05$. ** $p < .01$. *** $p < .001$.

As shown in Table 4.15, Variation Inflation Factor (VIF) scores for variables showed no concern for redundancy among variables in the model, since the largest variance inflation factor was equal to 4.42. This indicates that there is no evidence that co linearity between the independent variables contributed to the non-significant results.

Table 4.16 provides the correlations among the variables. The researcher examined the correlation data prior to conducting regression analysis. The data indicated that there was a significant relationship between each scale and student satisfaction. Surprisingly, Achievement and Confirmation were highly correlated with student satisfaction score.

Table 4.14.

The Motivational and Attitudinal Factors Affecting Student Satisfaction

	B	Beta	<i>t</i>	<i>p</i>	<i>R</i> ² (<i>F</i>)
(Constant)	-2.38		-2.57	.00	.78
Confirmation	.48	.43	8.25	.00***	(73.96)
Flexibility	.04	.07	1.28	.203	
PBC	-.07	-.05	-1.29	.197	
Self-efficacy	-.042	-.03	-.603	.55	
Enjoyment	-.155	-.17	-3.62	.00***	
Compatibility	.31	.24	3.78	.00***	
Achievement	.04	.08	1.76	.081	
Information	.06	.10	2.30	.03*	
System	.02	.03	1.20	.23	
Service	.11	.15	3.20	.00**	
Instructor	.10	.12	2.93	.00**	
PU	.11	.12	1.93	.54	

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4.15.

Regression Coefficients -Key Determinants of Satisfaction (N=270)

	B	SE	t	p	VIF
Constant	-2.38	0.93	-2.57**	0.01	
Confirmation	0.48	0.06	8.25***	0.01	3.14
Compatibility	0.29	0.08	3.78***	0.00	4.42
Enjoyment	-0.16	0.04	-3.62***	0.00	2.39
Service Interaction	0.11	0.03	3.20***	0.00	2.42
Instructor Interaction	0.11	0.03	2.93***	0.00	1.85
Information	0.07	0.03	2.30**	0.02	2.55

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Multiple $R = .78$; adjusted $R^2 = .76$; $F = 73.96$, $p < .001$

Table . 4.16.

Correlations of Motivational Beliefs and Attitudinal Beliefs (N=270)

	α	1	2	3	4	5	6	7	8
1.Compatibility	.89	(4.9)							
2.Enjoyment	.95	.72**	(4.56)						
3.PBC	.86	.68**	.60**	(5.67)					
4.SE	.90	.73**	.59**	.75**	(5.33)				
5.Flexibility	.89	.77**	.64**	.67**	.67**	(5.30)			
6.Achievement	.90	.51	.46**	.23**	.38**	.40**	(4.90)		
7.Confirmation	.94	.58**	.50**	.27**	.42**	.41**	.66**	(5.10)	
8.Satisfaction	.95	.59	.45**	.30**	.44**	.44**	.70**	.83**	(5.20)

** $p < 0.01$ level (2-tailed).

Note: The numbers in parentheses are means of each construct.

CHAPTER V. CONCLUSION

Summary of the Study

The study focused on examining relationships among perception of quality, perception of usefulness, satisfaction, and e-loyalty in the context of online learning in hospitality. Higher education institutions, including hospitality programs, have been challenged by major changes in environments (Sigala & Baum 2003). Today's students grow up with internet and digital devices (e.g., video games, e-mail, the web and instant messaging), and their behaviors differ from those of previous generations. As such, the challenges educational designers face are to recognize these difference and to develop educational offerings that are appropriate for their learning patterns, characteristics and behaviors (Prensky, 2001). This study was conducted with the participation of students from hospitality programs at six universities in the states of Iowa, Nevada, Virginia, Florida, and Texas. A total of 271 students completed questionnaires online or in classroom. A total of 39 out of 271 were graduate students.

A questionnaire was developed to understand students' perceptions of the five constructs of the research model: two types of perceived qualities (1PSQ and 2PSQ), perceived usefulness, satisfaction, and e-loyalty. Perceived infrastructure quality (1PSQ) reflects students' experiences of or perceived performance of the functional infrastructure, that is, the information and the system of online learning. Perceived interaction quality (2PSQ) relates to students' experiences of or perceived performance of student-instructor interaction and service interaction. A total of 30 items measuring perceived qualities were drawn from the studies of Barnes and Vidgen (2002), Sherry et al. (1998), and Paechter et al. (2010). Building on the D & M IS Success Model, which has three dimensions of perceived qualities, the researcher developed four dimensions of perceived qualities. They are information quality, system quality, service interaction, and instructor interaction. The scale of satisfaction was adapted from Keavency and Young (1997). The scale of loyalty was adapted from Eggert & Ulaga (2002) and Hennig-Thurau et al. (2001). The scale of perceived usefulness was adapted from Roca et al. (2006).

Relationships among five latent constructs of the proposed model

Relationship model was developed on the basis of a total of five hypotheses. Results of structural equation modeling indicated that perceived usefulness and satisfaction predicted e-loyalty. Especially, satisfaction had a strong effect on loyalty. Both the positive effect of perceived usefulness and that of perceived interaction quality on satisfaction were supported. However, the former was not as strong as the latter. Liao, et al. (2007) also reported the weak effects of PU on satisfaction in their previous studies. Perceived interaction quality was shown to have positive and significant relationship with perceived usefulness and student satisfaction. The impact of perceived interaction quality, which reflects service interaction and student-instructor interaction, on students' satisfaction was very strong. In contrast, perceived infrastructure quality, which reflects students' perceptions of information quality and system quality, failed to show the significant relationships either with perceived usefulness or satisfaction. Students' perception of the infrastructure reflecting online course content and Learning Management System (LMS) had an influence on students' satisfaction only through perceived interaction quality relevant to instructors and services. Measurement model showed perceived infrastructure quality and perceived interaction quality were highly correlated. As expected, the former strongly predicted the latter.

Inputs: Perceived online service quality (PSQ)

The study, building on the D & M IS Success Model, which proposed three input variables for successful information system, added a new dimension of instructor interaction to the original model. Thus, the study proposed four dimensions of perceived quality in the context of online learning. The four proposed dimensions of perceived service quality (PSQ), which are information quality, system quality, instructor interaction, and service interaction all turned out to be quite relevant in the context of online learning in hospitality although there were a little differences in the degree of relevance. For example, service interaction was shown to have stronger relevance than instructor interaction. Information quality was shown

to have stronger relevance than system quality. Nevertheless, all four perceived qualities had high path coefficients.

Process: Mediation effect

One of the objectives of the study was to examine and confirm the proposition that Benbunan-Fich, et al. (2005) suggested in the Online Interaction Learning Theory. The proposition was that, in the online learning context, the types or levels of interactions as perceived by students mediate inputs of learning and teaching factors, and outputs of student learning and satisfaction. The study empirically confirmed the proposition. Perceived interaction quality designed to reflect student-instructor interaction and service interaction in learning process had strong mediation effect between contextual learning and teaching factors and students' satisfaction. Thus, the study empirically confirmed that the two types of interactions in learning process can contribute to increasing students' satisfaction and positive attitudes toward online learning courses in hospitality.

Personal attributes

According to theories relevant to learning process proposed by Biggs (1979) and Benbunan-Fich, et al. (2005), individual learners have differences in study processes, and the effectiveness or quality of learning outcomes depends on these personal attributes. This study explored whether there was any difference in the level of perception of online learning quality, perceived usefulness, satisfaction, and loyalty depending on demographic characteristics such as gender, age, learners' previous online learning experience, learner's weekly online learning engagement. These demographic factors were tested using ANOVA except that t-tests were conducted for gender differences. According to the results, only gender showed significant differences in information quality. Female participants gave higher scores to information quality than males. However, other demographic characteristics showed no significant differences in sub-scales of the other four proposed research constructs including student satisfaction.

The study also examined students' motivational beliefs as part of student characteristics that contribute to students' satisfaction. Variables depicting students'

motivational beliefs including resource availability were entered to regression analysis along with all proposed variables on the relationship model. In other words, compatibility, flexibility, enjoyment, perceived behavioral control, achievement, confirmation; self-efficacy as well as the four sub-scales of perceived service quality, and perceived usefulness was entered to regression analysis. Based on the results, a satisfaction formula consisting of significant motivational factors and attitudinal factors was drawn as follows:

Satisfaction with online learning

$$= 0.48 \text{ Confirmation} + .29 \text{ Compatibility} + -.16 \text{ Enjoyment} + .11 \text{ Service Interaction} + .11 \text{ Instructor Interaction} + .07 \text{ Information Quality.}$$

These independent variables accounted for 77% of the variation in overall satisfaction with online courses in hospitality.

Outputs: Satisfaction and e-loyalty

In the proposed relationship model, for student satisfaction (CS), the amount of variance explained by perceived interaction quality (2PSQ) and perceived usefulness (PU) was 76%. For e-loyalty, the amount of variance explained by 2PSQ, PU, and CS was 53%. For PU, the amount of variance explained by 2PSQ was 55%. On the other hand, the examination of indirect effects of the infrastructure quality (1PSQ) on perceived usefulness, satisfaction and e-loyalty revealed the importance of managing 1PSQ. The indirect effect of 1PSQ on PU, CS, and e-loyalty was 67%, 78%, and 57% respectively.

The study also investigated factors contributing to satisfaction other than perceived qualities and perceived usefulness. The regression analysis confirmed that instructor interaction, service interaction, and information quality were important contributors to student satisfaction. This analysis also revealed that students were largely satisfied with the online learning course when they believed that online course met or exceeded their expectations, and that the online learning was compatible with their learning or life style.

Discussion

The study, on the basis of Online Interaction Learning Theory Model, attempted to harmonize the essence of EDT, TAM, and the IS Success Model to propose a relationship model for explaining online learners' satisfaction and e-loyalty. In this study, e-loyalty can be viewed as a synonym for intention to continuance with online learning because the e-loyalty construct in the study was consisted with items measuring only repurchase intention. Originally, at the initial phase of the study, e-loyalty construct was designed to measure the concepts of repurchase intention, recommendation, and relationship with the online program.

The main objective of the study was to examine the effects of perceived interaction (2PSQ), perceived infrastructure (1PSQ), and perceived usefulness (PU) on satisfaction (CS), and the effects of 1PSQ, 2PSQ, PU, and CS on e-loyalty (or online learning continuance intention). The study also examined the role of interaction in learning process and personal attributes as important contributors to increasing student satisfaction.

The structural model provided a good fit to the data, and most path coefficients in the research model were found to be interesting. First, the study was able to explain significant amount of variance in online learning satisfaction (76%) and e-loyalty (53%). The results suggest that the research model provided good explanatory power of user satisfaction. Second, satisfaction (CS) and perceived usefulness (PU) were identified as two significant drivers of behavioral intention towards continuous use of online learning course. Third, according to the findings, perceived usefulness (PU) had a direct effect on behavioral intention. The model fit in the structural model analysis indicated that the proposed model improved when PU had a direct effect on behavioral intention. It implies that PU predicts behavioral intention better than satisfaction. Possible explanation is that online learners believe continuing use of online learning course management system and service will increase their learning performance. Fourth, online learners' satisfaction is mainly determined by confirmation: confirmation alone explained 68% of variance in satisfaction. Further regression analysis revealed that, confirmation, compatibility, service instruction, instructor interaction, information, and enjoyment explained 76% of variance in satisfaction.

Perceived interaction quality (2PSQ) influenced both student satisfaction and perceived usefulness. The result that the dimension of perceived interaction quality (2PSQ) significantly affected student satisfaction is in agreement with the conceptual frameworks on learning process and the IS Success Model (Benbunan-Fich, et al., 2005; Biggs, 1999; DeLone & McLean, 2003) and with previous studies (Irons, et al, 2002). Benbunan-Fich, et al. (2005) and Biggs (1999) suggested that learning process that highly involves interaction or students' deep learning approach, or collaboration rather than individual study directly affects students' learning and satisfaction. The study of DeLone and McLean (2003) also suggests that the perception of high quality of the IS service, which might have resulted from appropriate student-instructor interactions, strongly influences users' satisfaction and continued use. Therefore, two interaction types confirmed in the study increase the students' satisfaction.

With regard to service interaction, giving feelings of connectedness with online course participants, creating a sense of personalization, and conveying a sense of learning community, are good examples that allow students to have affective learning experience toward the online course. In the same vein, educational institutions providing online hospitality courses will need to communicate with students about their needs and deliver service as they promised. With regard to instructor interaction, hospitality programs need to make sure that instructors teaching online provide feedback immediately via a variety of methods, support and counsel students concerning learning process, and involve the class actively by frequently offering opinions and asking questions of students.

One of the contributions of the study was that the study could identify the role of interaction in learning process. Interestingly, when the researcher entered 1PSQ reflecting the infrastructure of system and information together with 2PSQ reflecting instructor interaction and service interaction to SEM, the researcher found that 2PSQ mediated inputs of learning and teaching factors, and outputs of student satisfaction. This result is in agreement with the Online Interaction Learning Theory proposed by Benbunan-Fich, Hiltz, and Harasim (2005). The perception of quality (1PSQ and 2PSQ) in the context of online learning was not shown to have a positive, significant effect on online loyalty. Further analysis revealed that this insignificant effect was because of the mediating effects of perceived usefulness and student

satisfaction between PSQ and e-loyalty. Both 1PSQ and 2PSQ had only an indirect effect on e-loyalty through perceived usefulness.

The interaction quality of online learning can change students' perception of usefulness, and perceived usefulness was found to influence student satisfaction. In online learning, students' learning process requires documenting, creating, downloading, posting, and searching information related to discussion online, which is important and time-consuming. If an instructor using Learning Management System (LMS) cannot offer online learning courses which are accurate, timely, relevant, easy, and appropriate in format, students will give up continuing or turn to other competing educational providers.

The technology-mediated learning makes online learning service different from F2F service, and this suggests a re-evaluation of concepts of service. In an online course, students' interaction with the educational institutions, instructors, and peer students takes place through the technology, such as the website. During an online service encounter, students have to rely entirely on sight and sound, whereas students in the traditional learning (F2F) service experience can use all senses. Since interaction is central to the learning process, and is critical to relationship development among participants, online learning service is sometimes described as a relatively poor experience. Therefore, the need for clearer and more detailed information is essential for meeting students' expectations of instructors and of course requirements. In this respect, hospitality programs should not only create quality information but also actively maintain and improve the quality of their instructional course websites. Studies dealing with effective websites have revealed that quality of information of websites affect the user's trust (Wixom, 2005). Thus, in order to increase users' trust and empathy, all useful information relevant to student policies, course details, and support services should be complete and transparent. Course websites with detailed information have impact on students' perception of online course quality. Adopting adequate online learning technologies reflects the hospitality programs' technological capability and facilitates convenience of using the course website, which in turn enhances the students' belief in and perceived usefulness of the online course in hospitality.

Implications

The presented study has several implications for education administrators, instructional designers, and instructors. As the study indicated, the perceived qualities were significant, having impact on usefulness of and satisfaction with online courses. However, this study also found that the predicting power of quality variables such as System quality and Information quality diminished, giving ways to interaction variables. Another important implication is to what measures educational institution should monitor in retention/dropout. As the study indicated, perceived usefulness and satisfaction are predictors of loyalty. It implies that there exist different ways in retention of students. In one segment of students, loyalty may be driven through satisfaction, whereas in other segments loyalty may be driven by perceived usefulness as well.

Today, with the advance of technology, a number of educational institution have adopted a learning management system, and instructional system developers continue to put efforts in updating sophisticated learning management system (LMS). In this context, learning management system should be improved in the ways to enhance online interaction. The improved interaction should be built on collaboration between student and student, student and instructor. Also with regard to training, instructors should be encouraged to develop instructional materials in the ways to enhance interaction. Exchange of teaching experiences online through seminars can be a good way in achieving this.

The result of this study supports an assumption that female students are more satisfied with information quality than male students across different disciplines. According to Carlson (1971), the relationship between evaluation of service encounter and loyalty intentions is stronger for female than for male customers (Darley, Luethge, & Thatte, 2008). As such, satisfaction and loyalty should be very relevant criteria especially when female customers are represented in the customer base.

One implication of our findings is that instructor–student interaction quality indeed has a great impact not only on cognitive evaluation but also on affective evaluation. It means students have two paths evaluating the online course quality, in turn directly predicting e-loyalty. As a cognitive route, usefulness directly affects student’s online loyalty and

indirectly affects e-loyalty through satisfaction. As an affective route, satisfaction only directly predicts e-loyalty.

The finding that the dominant power of predicting student satisfaction with online course is in interaction-driven rather than information-and-system-driven quality should be a wakeup call for educational administrators or course management developers who believe that the information quality or the system quality is comparatively more important than interaction quality in driving students' satisfaction. It is possible that many online programs in hospitality as well as in other disciplines have had this misconception. Thus, one simple but an important implication of the findings can be that educational resources and online instructor training should be managed accordingly.

Especially, the negative confirmation in interaction quality would result in significant disaster (i.e., higher institutions fail to meet students' expectations), which results in customer dissatisfaction. Dutka (1994) stated that dissatisfied students typically do not complain so that an organization's information systems lack in such information. In contrast, students who are more affectively committed to the organization value the relationship they have with the hospitality program. This commitment is known to lead to a significant decrease in quality-based disappointment. In this study, an e-loyalty item reflecting "future relationship intention" was high in average mean, but did not indicate high correlation with the level of satisfaction and usefulness. One possible explanation is that the students of the hospitality programs in this study have already built trust toward their programs or positive relationship so much that students with even low satisfaction with an online course answered that they would continue relationship with the hospitality program. Thus, in order to keep the students' online learning experience positive and their continuance strong, it is important to actively manage the relationships. This may require maintaining good online instructors that manage interaction (Bendapudi & Leone, 2002). Dowling (2002) argues that the key to success (i.e. customer satisfaction and retention) is to maximize the moment of truth every time – something that would make sense for service encounter and pseudo-relationship customers. Similarly, in the online learning context, the determinant of success in online learning/teaching must be service and instructor interaction based on trust and empathy.

Finally, this study implies a new approach to online learner segmentation. The online learners are typically segmented by student status (full-time, part-time), gender, or age. Rather, the results of this study find the importance of segmenting online learners in hospitality programs by cognitive factor, affective factor, and personal and motivational factors. If online instructors can be trained to identify students in this category and adapt the service experience accordingly, then the teaching/learning service can indeed be adapted to a heterogeneous customer base. The online instructors or course management system developers should recognize that each student segment has its own optimal mix of quality or value proposition. By adapting the value proposition to specific student segments, both the perceptions and value that drive student loyalty can indeed be managed.

Limitations and Future Research

Although this study took a positive approach in reviewing previous literature and analyses of data using advanced statistical tools, there are some limitations. These include issues of representation of hospitality programs and instrument administrations. The data was collected from only six hospitality programs. So, this constraint may have impact on possible generalization of the research findings to any hospitality program. The model should be tested out in more varied college levels in terms of enrollment and location and on multiple colleges within the hospitality discipline. As the implications of the finding in the study are substantial, replicated research is necessary. Further limitations can be identified from the method of questionnaire administration. Although participating programs distributed questionnaire sincerely, there is a likelihood of biasness and error as questionnaires were administered in various ways.

Marketing literature shows that for customers who exhibit a strong relationship with a company, trust and commitment supplant satisfaction as drivers of loyalty. In other words, satisfaction works for developing loyalty among customers that are not inclined toward establishing enduring relationship. Thus, an extension of this work will be to investigate whether satisfaction with the online learning is not associated with student loyalty for the more experienced relationship-oriented students. Similarly, several scholars (Kandampully, 2000; Selnes, 1993) suggested image, experienced quality, and reputation should be

measured for loyalty. Since the loyalty explained was only 53 percent, it would be meaningful to adopt those non-quality measures.

Also, researchers need to examine the impact of the perceived interaction quality on other output variables such as access, faculty satisfaction, student learning, and cost effectiveness. Especially, seeking the knowledge on the impact of learning process variables on faculty satisfaction will be interesting. Finally, the comparisons of the impact of moderating variables on individuals learning and on collaborative learning will contribute to enhancing effectiveness of learning environment. The study will further highlight on the development of evaluation model of online course since more and more educational institutions are depending on instructional quality for survival in highly competitive environment.

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APPENDIX A. ONLINE SURVEY INSTRUMENT

Students' Perception of Online Learning in Hospitality Programs

Dear Student,

E-learning is increasingly popular and becoming a typical instruction on par with traditional classroom instruction. The questionnaire in this study is designed to investigate student perception, satisfaction with, and behavioral intention to online courses in the hospitality programs. The collected information can be used to further enhance the quality of online learning programs. I am inviting you to participate in the survey below because you are a student in a hospitality program.

Your responses will remain strictly confidential. You may choose to skip any questions that you are uncomfortable. The survey should take you 10 - 15 minutes to complete. Participation is voluntary and you may choose to discontinue anytime.

Completion of this survey will serve as your consent to participating in the study. If you need further information or concerns about this study, please contact Sungmi Song at 294-8600 (song@iastate.edu), or Professor Robert Bosselman (drbob@iastate.edu). If you have any questions about the rights of research subjects, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, Office for Responsible Research, (515) 294-3115, 1138 Pearson Hall, Ames, IA 50011.

As a way of saying "thanks," at the end of the survey participants may enter a drawing for one of four \$20 certificates. Your email will be needed to contact you in the event you win one of the certificates.

Are you taking or have you taken one or more online hospitality courses (partly or fully)?

Yes

No

Yes:

Student's Perception of Online Learning in Hospitality Programs

The online learning (OL) course web site is supported by a learning management system (i.e., WebCT, Blackboard, etc.) and it provides online learning environment where the online teaching /learning process occurs: Some of features of the online learning environment is that students may download course learning materials and lectures notes, post assignments and messages before entering an online discussion forums, interact with other students and instructors. Student can also receive feedbacks and assessments as posted on the course website.

Section 1. This section assesses your beliefs toward online learning, in general.

Please indicate the extent of your agreement or disagreement with each of the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly agree
I am likely to take another online course that is provided by this hospitality program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will recommend other people to take online courses from this hospitality program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will say positive things to other people about the services provided at this hospitality program.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I intend to continue the relationship with this hospitality program rather than discontinue (i.e., alumni org.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are there any suggestions for improving the online learning course?

Section 4. This section gathers personal data about online learners like you

Gender:

Male

Female

Ethnicity:

Caucasian-Non-Hispanic

Asian

African American

Hispanic

Other. Please specify:

Is your major Hospitality?

Yes

No. What is your major?

Name of university:

Student classification:

Freshman

Sophomore

Junior

Senior

Graduate

Current enrollment status:

Part time student

Full time student

Age:

Number of any online courses previously taken or currently enrolled:

OPTIONAL DRAWING:

Enter your email below if you are interested in being entered into a drawing for one of four \$20 gift certificates.

[Click to Go Back](#)[Finished? Submit your Survey](#)

APPENDIX B. INSTITUTIONAL REVIEW BOARD APPROVAL MEMO

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 5/5/2010

To: Sungmi Song
7E MacKay Hall

CC: Dr. Robert Bosselman
31 MacKay

From: Office for Responsible Research

Title: E-Learning: Investigating Student's Acceptance of Online Learning in Hospitality Programs

IRB Num: 10-169

Submission Type: New **Exemption Date:** 5/5/2010

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- You do not need to submit an application for annual continuing review.
- You must carry out the research as proposed in the IRB application, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.

Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

APPENDIX C. PERMISSION LETTER

Dear Professor,

My name is Sungmi Song. I am a Ph.D. student majoring in Foodservice and Lodging Management at ISU. I am conducting a study for my Ph.D. dissertation under the guidance of Professor Bosselman, through whom your name and email address were available.

I write to you to seek your kind cooperation and assistance in distributing my research survey to the students in your department. My dissertation focuses on the relationships among online course quality perceived by students, students' satisfaction with online course(s), and continued use of e-learning by students enrolled in hospitality programs in 4-year public universities. For this study, I plan to collect data through an online survey. In this respect, it would be highly appreciated if you could forward my email which contains a link to the online survey to students in your program. The target sample in the study is students who are currently taking at least one online course in hospitality programs as well as those who already experienced online course(s) since 2009.

The information obtained from this study will be shared with you in the form of a summary report reflecting the results of data analysis. This report will provide you with information on your students' perception and feelings about the online learning, and on how these feelings relate to student retention.

If you would like to have more information on this study or have any queries, just feel free to contact Sungmi Song at 515-294-8600 or Professor Robert Bosselman at 515-294-1783. A copy of the short preliminary institution survey has been provided below. It would be highly appreciated if you could kindly send us the feedback as to whether your program currently offers at least one online course and whether you will participate in this study.

Again, I would like to express my heartfelt appreciation for your kind understanding and assistance in advance.

Sincerely,

Sungmi Song
Doctoral student
Iowa State University
Department of Apparel, Educational Studies,
Hospitality Management (AESHM)
515-294-8600 ssong@iastate.edu

Robert Bosselman, Ph.D.
Chair of AESHM
Iowa State University
Department of AESHM
515-294-1783
drbob@iastate.edu

PRELIMINARY INSTITUTION SURVEY

Please indicate “X” on your agreement to the following questions.

1. Is your hospitality program currently providing at least one online course along with traditional face-to-face courses?

Yes _____ No _____

2. Did your hospitality program provide at least one online course in 2009 Spring or 2009 Fall term?

Yes _____ No _____

3. How many online courses are open for this 2010 Spring term?

1-2 __ 3-4__ 5-6__ 7-8__ 9-10__

4. Please list the names of course(s) that are and/or have been offered in online format.

5. Would you help us by participating in the study? Yes____ No ____

If you mark yes, you will receive an email that contains a link to our survey instrument so that you could directly forward it to the students in your hospitality department. Our questionnaire will include a screening question such as “Have you ever taken an online course?”

6. Thank you very much for your valuable time and help. Please send an **email back** with this form. The e-mail address for the reply is **ssong@iastate.edu**.

APPENDIX D. REMINDER**Reminder**

Dear Students,

An online learning survey was sent to you about 7-15 days ago. The survey is about your perception about online learning or web-based learning courses. Because your participation is very meaningful to the study, please help us finish the study.

If you haven't completed the survey, please participate in the survey. The responses will remain confidential. No individual responses will be reported. It will only take you about 7-10 minutes to finish the survey. If you already finished the online survey, please disregard this note. Thank you for your time and participation very much.

Best regards,

Sung Mi Song

Ph.D. Student

Hospitality Management

Iowa State University, Ames 50010

ssong@iastate.edu

APPENDIX E. EXPLORATORY FACTOR ANALYSIS TABLES

	CS	System	Information	Service	Instructor	PU	Loyalty	
CS18	.524		.013	-.186	.145	.096	-.148	.148
CS19	.520		.045	-.120	.127	.107	-.173	.196
CS16	.446		.044	-.129	.084	.042	-.134	.327
CS17	.415		-.001	-.094	.182	.043	-.227	.187
CS15	.396		.166	.071	.015	.056	-.121	.146
CS20	.377		-.138	-.297	.040	.173	-.105	.188
U3	.027		.818	-.141	.033	-.058	.103	.061
U7	-.045		.815	.109	.002	.109	-.145	-.021
U4	.016		.794	-.178	.041	-.099	.109	.028
U8	.027		.716	-.024	.015	.052	-.071	.042
U1	-.037		.713	-.189	.024	-.112	-.071	.042
U2	-.037		.706	-.177	.080	-.125	.017	.084
U9	.069		.634	-.023	.087	.040	-.142	.070
U5	.100		.620	.114	.037	.145	-.021	-.059
U6	-.043		.547	.107	-.011	.254	-.069	.075
IF11	.074		.143	-.744	-.012	.058	-.042	.000
IF13	-.005		-.012	-.736	.159	-.009	-.039	.040
IF15	.031		.020	-.699	.111	.107	.004	.063
IF10	.027		.184	-.685	.037	.021	-.083	-.054
IF12	.061		-.028	-.668	-.035	.135	-.114	-.038
IF14	-.021		.136	-.604	.052	.090	-.040	.142
IF16	.031		.240	-.490	.100	.069	-.074	.036
SI21	-.057		-.038	.030	.915	-.032	.024	.011
SI20	.039		.081	.062	.775	.004	-.058	-.025
SI22	.004		.017	-.010	.746	.091	-.007	.033
SI18	.092		.009	-.054	.654	.026	-.062	.067
SI23	.043		.029	-.206	.504	.198	-.065	-.018
SI19	-.070		.103	-.212	.382	-.031	-.155	.052
TI26	-.096		.026	-.145	-.064	.717	-.150	.145
TI30	.165		.005	.011	.130	.636	.043	-.042
TI27	.069		-.008	-.039	.156	.636	-.022	.085
TI25	-.014		.046	-.269	.026	.568	-.157	-.003
TI24	-.195		.094	-.229	.016	.560	.000	.206
TI29	.137		.101	.000	.110	.547	.010	-.095
PU1	-.038		.006	-.021	.071	-.037	-.948	-.001
PU2	.034		.036	.007	.030	-.005	-.894	.012
PU3	.127		-.007	-.123	.044	.020	-.671	.077
LY21	-.068		-.032	.093	.136	.025	-.103	.885
LY22	.009		.075	.097	.019	-.010	-.091	.853
LY25	.097		.051	-.086	-.027	.037	.088	.655
LY23	.252		.044	-.031	.051	-.027	-.197	.532
LY24	.308		.075	-.180	.078	-.002	-.010	.467

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.