STUDENT'S ATTITUDE AND PERCEPTION WITH INTENTION TO STUDY VIA E-LEARNING: A CASE STUDY OF ASSUMPTION UNIVERSITY STUDENTS

By

PRASERT SRIKRIRATKUL

A Thesis submitted in partial fulfillment of the requirements for the degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok, Thailand

November 2005
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ABSTRACT

e-Learning is a relatively new concept implying learning by means of digital media such as computers, Web pages, video conference systems and CD-ROMs. In recent years computer programs for e-Learning, consisting of tools such as text, graphics, video, three-dimensional objects and animations, have been developed. Virtual classrooms have also be used to broaden educational services.

So far, most research studies on the use of e-Learning in Higher Education have focused on ways for the teacher to incorporate the new technology into their teaching. Discussions, or even knowledge, about e-Learning from the student perspective seem to be very sparse.

Given this fact, the aim of this research was to study the relationship between students’ attitude and perception with their Intention to study via e-Learning. The three components of attitude, which are cognition, affect and conation formed the first independent variable; student perception of e-Learning was the second independent variable. Three demographic variables; age, gender, and grade point average (GPA) were also studied.

Using quota sampling, the researcher distributed 400 questionnaires to fourth year students in the ABAC School of Management and the Faculty of Science and Technology. These respondents were selected because they are the group with the highest potential to enroll for Assumption University’s e-Learning programs (CIDE, 2005).

Self-administered questionnaires were used to gather data from the respondents. The findings showed no significant differences in age, gender, GPA and students’ Intention to study via e-Learning. However, all three attitudinal components as well as perception showed significant relationships with Intention to study via e-Learning. The cognition component of attitude showed the highest mean (4.018) and the conative component the lowest (3.925).

The study concluded with recommendations for providers of e-Learning in higher education and also offered several suggestions for further research.
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Any mistakes that remain despite the wise counsel of my colleagues are solely the responsibility of the author.

Prasert Sritriratkul
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Chapter I

Generalities of the study

1.1 Introduction of the study

Educational processes have undergone many changes during the last century. From print learning materials mailed to students' homes, to educational radio broadcasts, to educational television programming, to recent forays in interactive Web-based e-Learning, ongoing technological changes have been reflected in the evolving role of teachers and students in the learning equation. Technological changes—particularly Web-based e-Learning technologies—have resulted in new curriculum design and teaching strategies, new and emerging organizational structures, and it has even transformed learning itself. McKenzie (1998) argued that technology would transform the act of teaching, whether or not teachers or students are ready for this inevitable change. According to McKenzie, when faced with new technology, students and/or teachers would likely adopt one of two approaches: they would either embrace it or they would dismiss it. In other words, teachers and students will either learn how to use new technology, or they would ignore it—the later of which would put them at disadvantage compared to their more technologically literate peers. Ballard opined that technology is reshaping today's school systems and educational institutions by offering students new ways of seeing and learning; giving teachers new ways of teaching and imparting knowledge; and administrators new ways of organizing our educational system (Ballard, 2000).
Innovations in teaching and learning have emerged, and educators are in the midst of becoming more adept at using new educational technologies. This fact is reflected in our changing language. Terms such as “open education,” “distance education,” “distance learning,” “virtual learning,” “remote learning,” “online learning,” and “e-Learning” are now part of educators’ everyday lexicon. Use of such terminology helps to define and shape the creative innovations taking place. However, many overlaps can be seen within these terms. Urdan and Weggen (2000), for instance, found that that online learning constitutes just one part of e-Learning; and further define it as learning processes that take place via the Internet and in blended classroom contexts. They specified that e-Learning covers a wide spectrum of applications and processes, including virtual classrooms and digital collaboration.

To explain what “exactly” is taking place, terms are helpful. However, terms are still being defined. The term “e-Learning,” for example, has generated many different definitions according to Carry and Willis (2001), who broadly define e-Learning as any form of learning that utilizes a computer or technological network for delivery, interaction, or facilitation. Becker (1991) opines that e-Learning covers a wider set of applications and processes, which include Web-based learning and virtual classrooms. Hall and Snider (2000) define e-Learning as the process of learning via computers over the Internet and Intranets.

According to the e-Learning Definition (Education Act, 2003), e-Learning refers to “a wide set of application and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes
the delivery of content via Internet, Intranet/Extranet (LAN/WAN), audio/video tape, satellite broadcast, interactive TV, and CD-ROM.” This definition was employed for the purpose of this study.

E-Learning via the internet has become one of the most important tools in the educator or trainer’s toolbox. Internet-based education and training has been experimented in many countries. Already, materials and courses, ranging from a simple syllabus to highly structured courses that are both classified and developed by instructional experts, are available. Some courses are free, while others require a high fee. Some courses are well designed, while others are not (Moore, 1996). Internet-based education is a form of distance education in which the course contents are delivered and the technologies and methodologies of the Internet provide the interactions. There have been studies that examine features of the Internet and Web-based education, most of these studies have focused on the effective design of Internet based education using various technical features of these technologies.

Ongoing research appears to concentrate more on the use of the Internet as a learning tool. Some scholars have used the term e-Learning to specifically refer to online learning. The benefits of online learning are abundant. It gives schools the ability to extend their reach well beyond their location, reduce costs, and give students the opportunity to learn and the flexibility to learn at their own time and pace (Chan and Welebir, 2003; Taylor, 2002).

The Internet as a teaching medium has been experimented on in several universities. Garrison & Borgia (1999) used the Internet for teaching the introductory
course in the Finance Department at Florida Gulf Coast University. In this course, students were required to attend classes in the first weeks. After that, the course was completely web-based in nature. In another instance, a statistics professor at California State University divided his class into two groups. The first group was taught using the traditional method, whereas the other group was taught using a website, e-mail, and a chat room. The results showed that those students who took part in the online-learning module registered a better performance than those students who were taught using the traditional method (McCollum, 1997).

As the trend in educational policies moves towards a learning-centered view of education generally, lifelong education has increasingly become the norm in developing the quality of life in Thailand. e-Learning will denote an overall scheme aimed at both restructuring the existing educational system as well as developing the entire education potential outside the education system. e-Learning will illustrate educational and learning processes in which young people and adults of all ages are involved throughout their lives, in gaining new knowledge. The findings of this study give direction for university teachers or concerned people to plan or manage to use e-Learning in the future.

The Setting of the Study

There have been several attempts over the past decade to utilize and integrate the Internet into Assumption University's educational system, beginning with the introduction of computer literacy courses in the late 1980s. e-Learning at the
Assumption University originally emerged in response to the introduction of the Internet and related computer applications. Like other universities around the world, especially those in Europe and North America, the Internet was first introduced in Assumption University in the early 1990s. Email was the most widely used Internet application at that time, but its use was restricted (only faculty and certain administrators specializing in computer and information technologies initially had access to the Internet). At that time, almost no thought was given to the potential of the Internet or e-Learning. With ever increasing availability of Internet access across the campus, coupled with exponential growth of computing capacity, by the mid to late 1990s e-Learning emerged to become a realistic alternative for those students interested in studying online.

Nevertheless, till today there is no systematic use of e-Learning across the University to lead students to a bachelor or masters degree. And while it is true that some departments use e-Learning in selected course offerings, the fact is that no comprehensive e-Learning system is in place to guide the future.

Starting from January 2006, Assumption University has planned an expansion of e-Learning activities in a holistic, comprehensive manner. On-line MBA and MSc programs have been finalized. These activities reveal the University’s clear and present interest in e-Learning. In short, the University’s administration is fully aware of the impact e-Learning is having in terms of both need and potential, and are responding by seriously examining the implementation of full-fledged programs.
1.2 Statement of the Problem

Assumption University, in its initial focus on offering higher education courses through e-Learning, needs to consider the benefits of e-Learning against traditional ways of teaching. The university specifically needs data on the perception and attitudes of graduating students toward enrolling for higher education via e-Learning. With this information in hand, Assumption University can endeavor to develop educational opportunities for Thai students, allowing them to access international databases and instructors through its e-Learning programs.

The rapid growth of Internet users will push institutions of higher learning to adopt e-Learning solutions. Although e-Learning has a potential to be the learning methodology for mass education in the future, the provider must understand what are the factors will influence the users' intention to adopt with the new technology. In terms of new technology adoption and acceptance in education discipline, the program provider (Assumption University) might face difficulties to predict why the potential users (students) will accept or reject it. Hence, this study examined the perception and attitude of students with their intention to study via e-Learning. There is a lack of studies investigating Thai students' intention to adopt this new technology, particularly focused on the electronic Masters in Business Administration (e-MBA). Hence, the research question posed in this study was: "What is the relationship between students' perception and attitude with their intention to study higher degree courses via e-Learning?"
1.3 Research of Objectives

To respond to the major research problem, Intention to study via e-Learning was the dependent variable. Perception, Attitude and Demographic characteristics were the independent variables that influence the dependent variables. Attitude consists of cognitive, affective and conative elements. Demographic characteristics in this study, included gender, age, and grade point average of graduating senior students. The research objectives are stated below:

1. To study the relationship between Assumption University students’ perception and their intention to study via e-Learning.
2. To study the relationship between Assumption University students’ attitude and their intention to study via e-Learning.
3. To study the differences in the Assumption University students’ demographic factors, comprising gender, age and grade point average and their intention to study via e-Learning.

1.4 Scope of the Research

In this study, the researcher examined the perception and attitude of 400 students in the fourth year (senior) students of Assumption University in relation to studying for higher degree courses via e-Learning. Assumption University students were selected because they are a high potential group of student to join e-Learning programs which Assumption University is scheduled to open and which offer master’s degree courses in computing and business. This statement is based on the
fact that in the preparatory courses offered by Assumption University via e-Learning, 86 percent of students are previous Assumption University alumni (College of Internet Learning, 2005). The conceptual model in this research consists of independent and dependent variables. The independent variables are demographic characteristics which comprise gender, age and grade point average, perception and attitude which consist of cognitive, affective and conative elements. The dependent variable is Intention to study via e-Learning.

1.5 Limitations of the Research

The target population of this study was fourth year university students of Assumption University. Because the potential students who can be admitted to the Internet course programs are those with bachelor degrees in Business and Science, only two faculties of Assumption University were chosen for this study. The sample size was 400 students who were given the questionnaires. The research study was limited to three independent variables, i.e., perception, attitude, and demographic characteristics composed of gender, age and grade point average of university students. The dependent variable was Intention to study via E-learning.

The scope of this research was limited only to Assumption University students, hence the results of this research may not explain the attitude of students in other universities. A further limitation was the period of collection. Since this research was conducted in a specific period, therefore, the results may vary in other periods reflecting changes in attitude and behavior.
1.6 Significance of the Study

e-Learning offers many advantages through the use of technology, especially Internet technology, such as convenience, easy to access and cost saving. It will create opportunity for worldwide education, general acceptance and a chance for Thai students to develop themselves and study with world-class lecturers from other well-known universities in the world.

The Ninth Thai Education Act (1998-2004) stresses education for life as well as learner-centered education. Consequently, a change in educational method is essential; learner-center method has been implemented in the new curriculum in response to the concept of basic education. Moreover, the adoption of lifelong education and lifelong learning as guiding principles of education policy are able to provide extensive education and learning opportunities mainly because of the Internet. In regard to educational opportunities, higher education should be equally accessible to all on the basis of merit. In the Ninth National Education Plan, the Thaksin Government has encouraged institutions to offer courses via e-learning as the channel to extend the learning process by developing a modern and valid socio-economic information system which provides inter-linkages among the national, provincial and community level in Thailand. In the light of this fact, Assumption University is one of such institution which plans to start full-fledged master level courses in business and science. The University also hopes to begin a doctoral level program via e-Learning in the next three years (College of Internet and Distance Learning, 2005). The findings of this study will therefore help Assumption
University to tailor its programs to better fit the needs of students and also correct some of the weaknesses that potential students perceive in acquiring education via e-Learning.

1.7 Definition of Terms

**Affect:** The affective component refers to our feeling with respect to the focal object such as fear, liking, or anger (Schiffman and Kanuk, 2004).

**Attitude:** is an enduring organization motivational, emotional, perceptual and cognitive process with respect to some aspect of our environment (Schiffman and Kanuk, 2004).

**Asynchronous Learning:** Any learning event where interaction is delayed over time. This allows learners to participate according to their schedule, and be geographically separate from the instructor. Could be in the form of a correspondence course or e-Learning. Interaction can take use various technologies like threaded discussion. (Porter, 1994).

**Behavioral Intentions** - Behavioral intentions are our goals, aspirations, and our expected responses to the attitude object (Schiffman and Kanuk, 2004).

**Cognitions:** Cognitions are our beliefs, theories, expectancies, cause and effect beliefs, and perceptions relative to the focal object (Schiffman and Kanuk, 2004).

**Computer Based Training (CBT):** Training or instruction where a computer program provides motivation and feedback in place on a live instructor. CBT can be delivered via CD-ROM, LAN or Internet. Creation is done by teams of people
including instructional designers, and often has high development costs. (Porter, 1994).

Conation: Conation is a tendency to respond in a certain manner toward an object or activity. Dubois (2000) was of the view that the conative component corresponds to various behavioral drives associated with a specific attitude. The conative component is linked to behavioral intention. For marketing, conation is implicit with the tendency of consumer purchasing a product.

Distributed Learning: Distance learning that makes use of information technology. Includes most types of distance learning but not plain correspondence (very similar to e-Learning) (Porter, 1994).

Distance Learning: Learning where the instructor and the students are in physically separate locations. Can be either synchronous or asynchronous. Can include correspondence, video or satellite broadcasts, or e-Learning. Usually implies the higher education level (Porter, 1994).

e-Learning: Any learning that utilizes a network (LAN, WAN or Internet) for delivery, interaction, or facilitation. This word include distributed learning, distance learning (other than pure correspondence), Computer Based Training (CBT) delivered over a network, and Web Based Training (WBT). Can be synchronous, asynchronous, instructor-led or computer-based or a combination.

Intention to study via e-Learning: In this study it refers to the readiness on the part of students to enroll for courses via e-Learning programs.
**Perception:** is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world. Thus, perception in humans describes the process whereby sensory stimulation is translated into organized experience (Schiffman and Kanuk, 2004).

**Student:** Fourth year university students at Assumption University enrolled in Faculties of Science and Technology and Business Administration.

**Synchronous Learning:** Any learning event where interaction happens simultaneously in real-time. This requires that learners attend class at its scheduled time. (Porter, 1994).

**Web Based Training (WBT):** Training which is delivered over a network (LAN, WAN or Internet). Can be either Instructor-led or Computer Based. Very similar to e-learning, but it implies that the learning is in the professional or corporate level. (Porter, 1994).
Chapter II

Literature Review

In this chapter, related theories and concepts are explained. This research focused on studying the relationship between students’ perception and attitude with their intention to study via e-Learning. All theories and concepts discussed in this chapter are necessary to develop a theoretical and conceptual framework of this research.

2.1 Consumer Behavior

Consumer behavior refers to how an individual spends his or her available resources, such as time and money, on consumption-related items when making purchasing decisions (Schiffman & Kanuk, 2000). Cultural, social, personal, demographic and psychological characteristics influence consumer purchase decisions. The consumer behavior theory widely states that consumers will largely engage in risk-reduction behavior by seeking information about the products or services when the perceived risk increases (Murray, 1991).

Generally, marketing and consumer behaviors illustrate the consumer purchase behavior from the stage of problem recognition, to information search, to evaluation of alternatives, to purchase decision and finally to post-purchase behavior (Zeithaml & Bitner, 2003). Figure 2.1 shows consumer behavior in relation to the sequence of purchase process for services.
Figure 2.1: Stages in Consumer Decision Making and Evaluation of Services

![Figure 2.1: Stages in Consumer Decision Making and Evaluation of Services](image)


The first step in Figure 2.1, when the process of buying a service has taken place, is related to the recognition of needs and expectations. Following this, the purchase is regular and low risk, consumers can make their purchase decision quickly. On the other hand, an intensive information search is employed for the first time for usage or high perceived risk. Based on the information on hand, consumers then evaluate alternative service suppliers by reviewing documentation such as brochures, websites, consulting with the other people such as friends and visiting potential service suppliers. In the stage of purchase and consumption, consumers’ experience with specific service providers lead to the perceived effectiveness of service encounters. Finally, the consumers evaluate service quality and their (dis)satisfaction comparing with their service experiences and expectations. The outcome, therefore, affects brand loyalty and purchase decision whether to stay or switch (Lovelock, Wirtz & Keh, 2002).
2.2 Definition of Perception

Perception is the basis of all learning. Perceptions result when a person gives meaning to external stimuli or sensations. Meanings which are derived from perceptions are influenced by an individual's experience and many other factors (Schiffman and Kanuk, 2000). Cushner (2003) stated that perception is the process by which people are aware of stimuli in the world around them.

Schiffman and Kanuk (2000) argued that perception is the process by which individuals select, organize, and interpret stimuli into a meaningful and coherent picture of the world. Perception has strategy implications for marketers because consumers make decisions based on what they perceive rather than on the basis of objective reality.

Consumers' selection of stimuli from the environment is based on the interaction of their expectations and motives with the stimulus itself. The principles of selective perception include the following concepts: selective exposure, selective attention, perceptual defense, and perceptual blocking. People usually perceive things they need or want, and block the perception of unnecessary, unfavorable, or painful stimuli.

Consumers organize their perceptions into unified wholes according to the principles of Gestalt psychology: figure and ground, grouping, and closure. The interpretation of stimuli is highly subjective and is based on what the consumer expects to see in light of previous experience, on the number of plausible explanations he or she can envision, on motives and interests at the time of
perception, and on the clarity of the stimulus itself. Influences that tend to distort objective interpretation include physical appearances, stereotypes, halo effects, irrelevant cues, first impressions, and the tendency to jump to conclusions.

Just as individuals have perceived images of themselves, they also have perceived images of products and brands. The perceived image of a product or service (how it is positioned) is probably more important to its ultimate success than are its actual physical characteristics. Products and services that are perceived distinctly and favorably have a much better chance of being purchased than products or services with unclear or unfavorable images.

Compared with manufacturing firms, marketers of services face several unique problems in positioning and promoting their offerings because services are intangible, variable, perishable, and are simultaneously produced and consumed. Regardless of how well positioned a product or service appears to be, the marketer may be forced to reposition it in response to market events, such as new competitor strategies or changing consumer preferences.

Consumers often judge the quality of a product or service on the basis of a variety of informational cues; some are intrinsic to the product (such as color, size, flavor, and aroma), whereas others are extrinsic (e.g., price, store image, brand image, and service environment). In the absence of direct experience or other information, consumers often rely on price as an indicator of quality. How a consumer perceives a price—as high, low, or fair—has a strong influence on
purchase intentions and satisfactions. Consumers often rely on both internal and external reference prices when assessing the fairness of a price.

Consumer imagery also includes perceived images of retail stores that influence the perceived quality of products they carry, as well as decisions as to where to shop. Manufacturers who enjoy a favorable image generally find their new products are accepted more readily than those of manufacturers with less favorable images.

Consumers often perceive risk in making product selections because of uncertainty as to the consequences of their product decisions. The most frequent types of risk that consumers perceive are functional risk, physical risk, financial risk, social risk, psychological risk, and time risk. Consumer strategies for reducing perceived risk include increased information search, brand loyalty, buying a well-known brand, buying from a reputable retailer, buying the most expensive brand, and seeking reassurance in the form of money-back guarantees, warranties, and prepurchase trial. The concept of perceived risk has important implications for marketers, who can facilitate the acceptance of new products by incorporating risk-reduction strategies in their new-product promotional campaigns.

2.3 Consumer Attitude

In everyday life, attitudes influence our idea, the ways people think and also attitudes adjust how individuals judge and react towards other people, objects, and events. Attitudes formation are related to the evaluation stage of the consumer
decision process (Bearden, Ingram, & Laforge, 2001). Consumer attitudes are learned predispositions to respond favorably or unfavorably to a product or brand.

Buyers' attitudes toward brands are important because experience and research finding indicate that attitudes influence behavior. Attitude information is useful in marketing strategy development (Cravens, 2000).

Chisnall (2001) gave the definition of an attitude as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related” (Chisnall, 2001).

Attitude is a positive or negative feeling about an object (say, a brand) that predisposes a person to behave in a particular way toward that object. Attitudes derive from a consumer's evaluation that a given brand provides the benefits necessary to help satisfy a particular need (Boyd, et al., 2002).

An attitude comprises an individual's general affective, cognitive, and behavioral responses to a given object, issue, or person (Zikmond & d’ Amico, 2002).

An attitude is a lasting, general evaluation of people (including oneself), objects, advertisements, or issues (Solomon & Stuart, 2003).

Attitude describes a person's relatively consistent evaluations, feelings, and tendencies towards an object or idea (Kotler & Armstrong, 2002).

Naturally, attitudes are not innate, but they develop with learning over time by individuals who get some inventory of predisposition to act or think and express
their opinions towards the objects. Thus, opinion, and attitudes are closely related. Since attitudes economize on energy and thought, attitudes are very difficult to change. A person's attitudes settle into a consistent pattern, and to change a single attitude may require major adjustments in other attitudes.

Source of Attitudes

There are three major sources of attitudes (Hanna & Wozniak, 2000).

Personal Experience with Objects. People evaluate objects in the environment and form attitudes toward them, people will touch, feel, try on, or examine objects they encounter.

Social Interaction. People have social interaction and the attitude of family members, friends, neighbors, and colleagues. All of these groups are influential in forming attitudes.

Exposure to Mass-Media. The information exposed to various mass-media that cannot be underestimated. Most marketing communication, such as newspapers, magazine, telephone, faxes or computer networks do influence attitudes formation.

Attitudes Components

Most researchers agree that an attitude has three components: affect, behavior, and cognition (Solomon & Stuart, 2003).
**Cognitive Component.** The cognitive or the beliefs depend on available data. The cognitive component includes the knowledge, beliefs and associations held regarding the object (Dubois, 2000). A person will combine direct experience with the information from various sources and form into the beliefs. "The cognitive component is usually easier to influence than the feeling component."

**Affective Component.** The affect or feeling is related to emotional content and arouses either likes or dislikes of an object. The affective component corresponds to the evaluation of the image profile. It incorporates the positive or negative feelings experienced as well as the emotions involved.

**Behavioral Component.** (Conative Component) is a tendency to respond in a certain manner toward an object or activity. Dubois (2000) was of the view that the conative component corresponds to various behavioral drives associated with a specific attitude. The conative component is linked to behavioral intention. For marketing, conation is implicit with the tendency of consumer purchasing a product.

In the tri-component theory of attitude structure, the affective component is usually presented after the cognitive component, which would tend to indicate that feeling always follows knowledge (Dubois, 2000). These three components of attitudes can be remembered as "The ABC Model of Attitudes" (Solomon & Stuart, 2003).

Figure 2.2 shows how the attitude is formed and leads to behavior intention and influences consumer behavior. Thus, to identify the manner in which attitudes
are formed is important because it provides guidance to those interested in influencing consumer’s attitudes and setting out the components of an attitude helps marketers to understand how it integrates motivation, perception and consumer experience and purchasing intentions since customers will buy the product or brands according to their attitudes.

Figure 2.2: Attitude Components and Manifestations

2.4 Definitions of e-Learning

The term “e-Learning,” for example, has generated many different definitions according to Carry and Willis (2001), who broadly define e-Learning as any form of learning that utilizes a computer or technological network for delivery, interaction, or facilitation. Becker (1991) opines that e-Learning covers a wider set of applications and processes, which include Web-based learning and virtual classrooms. Hall and Snider (2000) define e-Learning as the process of learning via computers over the Internet and Intranets. Jamlan (2004) said that e-Learning can be defined as “acquisition and use of information distributed and perceived by technological means.”

Several researchers have used the term e-Learning to narrowly refer to online learning. However, the meaning of e-Learning is much broader than online learning. According to E-learning Glossary (2003), e-Learning refers to “a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN /WAN), audio /video tape, satellite broadcast, interactive TV, and CD-ROM.”

Suttakankul (2003) stated that the term e-Learning should be confined to the use of electronic media, such as cassette tapes, video tape, CDs, special software, power point presentation or other presentation programs, and the Internet, to complement classroom teaching.
Rojananon (2003) stated that e-Learning means the new educational systems which use Internet technology-aided knowledge and link knowledge unlimitedly through the computers.

Marc (2000) argued that e-Learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three fundamental criteria:

1. E-Learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information. So important is this capability that it is fast becoming an absolute requirement of e-Learning. As useful as CD-ROMs (and DVDs) are for instruction and information delivery, especially for rich media-based simulations, they lack the network ability that enables information and instruction to be distributed and updated instantly. So while CD-ROMs are indeed technology-based learning systems, they should not be classified as e-Learning.

2. It is delivered to the end-user via a computer using standard Internet technology. This is a little tricky because the definition of just what is a computer is, constantly changes. One can see a merging of television and computers, in products like Web-TV, for example, as well as the delivery of the Web to cell phones, pagers and personal digital assistants, such as the PalmPilot. The key characteristic is the use of standard Internet technologies, such as the TCP/IP protocol and Web browsers that create a universal delivery platform. While corporate business television (usually broadcast by satellite and often using a
“student response system” to provide a level of interactivity) meets the first criterion, it can be updated and distributed instantaneously—it doesn’t meet this requirement. However, new technology such as IP over satellite provides very fast connections and meets this requirement.

3. It focuses on the broadest view of learning—learning solutions that go beyond the traditional paradigms of training. e-Learning is not limited to the delivery of instruction, characterized by computer-based training (CBT). e-Learning goes beyond training to include the delivery of information and tools that improve performance. For the same reason, Web-based training (WBT) or Internet based training (IBT) are simply more up-to-date descriptions of CBT and are also too limiting as a description of e-Learning.

   e-Learning spans distance, but distance learning’s broad definition also includes correspondence courses, one-way television courses, or other approaches that don’t fit any of the above criteria. So we can say that e-Learning is a form of distance learning, but distance learning is not e-Learning.

2.4.1 e-Learning in educational settings

The traditional delivery system for higher education has been a classroom setting with a professor giving a lecture and students listening and writing notes. Interaction between the professor and student has been viewed as an essential learning element within this arrangement. However, innovations in educational delivery mechanisms have challenged this paradigm. Advances in information
technology (IT) are enabling little used educational delivery methods such as distance learning (DL) to gain new life. In addition, the advances in IT have ushered in a new paradigm, on-line learning (OL).

The result is that many institutions of higher learning have adopted distance and on-line education as the next logical step in educational delivery systems. These systems are being promoted as the educational pedagogy of the future. Some experts have gone as far as to predict that the "residential based model," that is, students attending classes at prearranged times and locations will disappear in the near future (Blustain, Goldstein, and Lozier 1999 and Drucker 1997). However, one overriding question that must be addressed is how will these new educational delivery approaches that move away from the basic face to face relationship between a professor and students impact student learning and student perceptions of learning.

There are several cogent reasons for adopting and implementing e-Learning into an educational system:

1. **The growth of information technology**: e-Learning has become an ideal delivery vehicle for education and learning.

2. **It is information rich**: e-Learning offers both teachers and learners access to any where, any time "information rich” resources

3. **Alternative learning strategy**: e-Learning can reach those previously denied access (e.g., students with physical disabilities)
4. **Blended learning**: e-Learning can augment traditional classroom offerings, thereby freeing up valuable resources and expanding the offering to greater numbers of campus-based students (Spender, 2001).

In light of e-Learning's flexibility, Spender (2001) asserts that e-Learning is the next generation of learning. However, Spender also cautions that the shelf-life of knowledge is usually very short in today's globalizing economy; therefore, one way students can meet the demands of their continuous learning curve, is to engage in e-learning a time and place convenient to them. e-Learning thus derives numerous benefits to meet the objectives of continuous learning. It:

- Offers links to useful learning materials
- Provides online materials and self-assessments to guide students' learning processes
- Increases access to content-rich learning materials
- Facilitates interest via increased interaction
- Provides immediate feedback and positive reinforcement
- Creates a flexible learning environment conducive to students' busy lifestyles and employment schedules.
- Provides ongoing support for teachers
- Creates balance between different sources of information
- Facilitates dialog between and among teachers and students (Haugland and Wright, 1997).
Another factor influencing higher education is increased competition for students. Universities are banding together to form consortiums to offer additional degrees and flexibility in course offerings. In addition, business firms such as Motorola are offering courses to their employees to upgrade their skill and knowledge sets.

The changing demographics of students, new required skill sets, and new educational competitors are driving the adoption of new educational delivery systems that bridge the time-place gap that traditional courses have created. Interactive distance teaching (DL) and world wide access of educational instruction through Internet services (OL) offer non-residential education services which may be more compatible with student lifestyles and needs. Educational delivery through the Internet is also encouraged by the dramatic reduction in the cost of personal computers and the increased capabilities of telecommunications. Reductions in budgets for higher education are driving administrators to find new ways to reduce expenditures. Although institutional start-up costs for OL and DL may be substantial, many administrators believe that as more students use such services, cost per credit hour will dramatically decrease.

2.4.2 Benefits of e-Learning

The vast movement towards e-Learning is clearly motivated by the many benefits it offers. However much e-Learning is praised and innovated, computers will never completely eliminate human instructors and other forms of educational
delivery. What is important is to know exactly what e-Learning advantages exist and when these outweigh the limitations of the medium.

Features Unique to e-Learning

Like no other training form, e-Learning promises to provide a single experience that accommodates the three distinct learning styles of auditory learners, visual learners, and kinesthetic learners. Other unique opportunities created by the advent and development of e-Learning are more efficient training of a globally dispersed audience; and reduced publishing and distribution costs as Web-based training becomes a standard.

e-Learning also offers individualized instruction, which print media cannot provide, and instructor-led courses allow clumsily and at great cost. In conjunction with assessing needs, e-Learning can target specific needs. And by using learning style tests, e-Learning can locate and target individual learning preferences.

Additionally, synchronous e-Learning is self-paced. Advanced learners are allowed to speed through or bypass instruction that is redundant while novices slow their own progress through content, eliminating frustration with themselves, their fellow learners, and the course. In these ways, e-Learning is inclusive of a maximum number of participants with a maximum range of learning styles, preferences, and needs.
Collaborative Learning

All collaborative learning theory contends that human interaction is a vital ingredient to learning. Consideration of this is particularly crucial when designing e-Learning, realizing the potential for the medium to isolate learners. With well-delivered synchronous distance education, and technology like message boards, chats, e-mail, and tele-conferencing, this potential drawback is reduced. However, e-Learning detractors still argue that the magical classroom bond between teacher and student, and among the students themselves, can not be replicated through communications technology.

Advantages of e-Learning to the Educational Institute

Some of the most outstanding advantages to the institute are:

Reduced overall cost is the single most influential factor in adopting e-Learning. The elimination of costs associated with instructor's salaries, meeting room rentals, and student travel, lodging, and meals are directly quantifiable. The reduction of time spent away from the job by employees may be the most positive offshoot.

Learning times reduced, an average of 40 to 60 percent, as found by Brandon Hall (Web-based Training Cookbook, 1997).

Increased retention and application to the job averages an increase of 25 percent over traditional methods, according to an independent study by J.D. Fletcher (Multimedia Review, Spring 1991).
Consistent delivery of content is possible with asynchronous, self-paced e-Learning.

Expert knowledge is communicated, but more importantly captured, with good e-Learning and knowledge management systems.

Proof of completion and certification, essential elements of training initiatives, can be automated.

Advantages to the Student

Along with the increased retention, reduced learning time, and other aforementioned benefits to students, particular advantages of e-Learning include:

On-demand availability enables students to complete training conveniently at off-hours or from home.

Self-pacing for slow or quick learners reduces stress and increases satisfaction.

Interactivity engages users, pushing them rather than pulling them through training.

Confidence that refresher or quick reference materials are available reduces burden of responsibility of mastery.

Student Alienation

Alienation is a term used to describe student estrangement in the learning process (Brown, Higgins, & Paulsen, 2003). Mann (2001) defined alienation as “the
state or experience of being isolated from a group or an activity to which one should belong or in which one should be involved" (p. 7). Newmann (1981) identified four fundamental aspects of student alienation: powerlessness, normlessness, meaninglessness, and social isolation. Powerlessness refers to student perception of absence of personal control in learning. Normlessness reflects lack of appropriate rule-governed behavior (e.g., academic dishonesty). Meaninglessness describes alienated students' interpretation of curriculum as irrelevant to their current and future needs. Loneliness and separation from peers and teachers characterizes social isolation. Alienation is a useful construct for understanding the mechanisms associated with undesirable learner outcomes and in developing strategies to circumvent student academic failure (Redden, 2002; Taylor, 2000; Thorpe, 2003).

The causes of student alienation are multifaceted including curricular, institutional, and socio-cultural factors (Brown et al., 2003; Huffman, 2001; Redden, 2002; Rokach, Bauer, & Oreck, 2003; Taylor, 2001; Trusty & Dooley-Dickey, 1993).

Alienated students feel incongruent with curricula and devoid of opportunities to establish meaningful connections. Such disconnection results in apathy in the learning process (Parish & Parish, 2000). According to Mann (2001), alienation is caused by a teaching-learning process characterized by compliance and bereft of creativity. In higher education, the learner is largely removed from the content to be learned; individual opinion is devalued and reliance on personal perception is dismissed as unscientific. Frosh (1991) argued that the very ethos of
universities and colleges alienates students by excessive focus on utilitarianism, instrumentalism, measurable performance indicators, and standardized competencies. Ross (2000) argued that contemporary society breeds alienation and disconnection among people. The increasing presence of information and communication technologies has been identified as a catalyst of alienation in human learning and social exchange (Cooper, 1995; Rintala, 1998). Knapp (1998) summarized the popular sentiment that "computer-based information technologies separate and alienate people from direct experience with nature and community, pollute the environment, disrupt ecosystems, and lead to inadequate curricula" (p. 7). Some educators/researchers paint a picture of alienated youth surfing the net in chronic social isolation (Tell, 2000) or gravitating toward violent and alienating computer games and Websites (Slater, 2003). Cadieux (2002) reported that college students in face-to-face learning groups had stronger feelings of trust and interaction effectiveness than did students in online learning groups, although "no significant relationship was found between sense of community and course grades" Social and learning applications of information technology are, to some extent and in some cases, interpreted as mechanisms of student alienation (Muse, 2003). In contrast to the complex and sometimes controversial causes of student alienation, the consequences of academic disconnection are straightforward. Withdrawing from post-secondary study prior to program completion has been attributed to student alienation (Cadieux, 2002; Muse, 2003).
Requirements for implementing e-Learning education

The literature examines the importance and benefits of e-Learning as an educational tool. The literature also shows that educators are concerned with increasing student access to educational resources and communication processes (Hartly and Robertson, 2001). Nonetheless, when introducing e-Learning into a new context, "buy-in" from teachers is essential. Put simply, even though there is a recognized need for increased access, e-Learning technologies cannot be used effectively without the full support of those who will use them (e.g., faculty and staff). For example, teachers must transition away from traditional methods of teaching, towards a more constructivist pedagogy that will enable students to derive full benefit from e-Learning (O'Donnell, 1991).

The literature also shows that teachers who hold "less traditional" views on education, are more likely to perceive e-Learning a viable approach in their everyday teaching activities (Becker, 1991; Hannafin and Savenye, 1993; Kook, 1997; O'Donnell, 1991; Salmon, 2000) and that in general, teachers tend to hold positive attitudes towards e-Learning (Kleiman, 2000; Minton, 2000; Teather, 2000).

But the process is more complicated that simply saying teachers are "open to e-Learning." According to Mason (2001), comprehensive staff training initiatives are necessary to allow those involved to become proficient in the technical and educational aspects of e-learning. Training initiatives must integrate "learning about educational design" with hands-on "learning how to use the technological devices and tools" to teach. Teachers therefore must be encouraged to become active
participants in the design and implementation of e-Learning processes, instead of having it imposed upon them. Involving teachers in the design and implementation phases compels them to become proactively involved, and more importantly, supportive of e-Learning initiatives at the institutional level (Mason, 2001).

For e-Learning to take root and grow, a robust technical infrastructure must also be in place to support all the technical aspects necessary for the production of course materials, delivery of e-Learning courses, and teacher and student support (Mason, 2001). Implementing e-Learning in an institutional setting therefore requires comprehensive strategic planning. Davidson and Schofield (1997) stated that changing the educational offering through technology requires employing effective implementation plans and strategies. For example, sound e-Learning course planning requires attention to developing course contents that include sound pedagogical underpinnings, and are suited for e-Learning delivery (Biddara and Dias, 2005). Attention to various sub-strategies to facilitate the adoption e-Learning is also required to ensure seamless integration of e-Learning across an organization. Planning is clearly a complex process, one which should ideally be institution-specific (Davidson and Schofield, 1997).

**e-Learning and Demographic Variables**

So far, most discussions on the use of e-Learning in universities have focused on ways for the instructor to incorporate the new technology into their teaching. Discussions, or even knowledge, about e-Learning from the student
perspective seem to be sparse. However, there are reports of students overwhelmingly preferring to take class using e-Learning than a traditional course, they felt that e-Learning was a helpful tool in their success (Brotherton and Abowd, 2002).

Students’ perception of e-Learning in university education may be influenced by specific individual factors. In addition to the variables age and gender, there are at least three other characteristics: previous experience of computers, technology acceptance, and individual learning style.

Young students may have experienced e-Learning in secondary schools. On the other hand, older students may for the first time have met computers for educational purposes. Irrespective of age, men are supposed to be more used to computers than women. Women, typically display lower computer aptitude and higher levels of computer anxiety. Research has indicated that men’s technology-usage decisions are more strongly influenced by their perception of usefulness. In contrast, women are more influenced by perceptions of ease of use. Men and women focus on different aspects of using computers (Venkatesh and Morris, 2000).

Individual learning styles play an important part in adapting to new learning situations. Individuals differ in their general skills, attitudes and preferences for processing information, constructing meanings from it, and applying it to new situations (Jonassen and Grabowski, 1993). Hence, individuals would react and adapt differently to e-Learning depending on their individual learning style.
Despite the theoretical benefits that e-Learning systems can offer, difficulties can often occur when systems are not designed with consideration to learner characteristics. Such differences between learners may be defined in terms of nationality, gender, and cognitive learning style (Freedman and Liu, 1996; Liang and McQueen, 1999). It is also theoretically possible that individual differences may occur cross-culturally because of differences in cognitive learning style between individuals from different cultures and this issue of cross-cultural differences in learning style has been greatly debated over recent years. For example, some authors have asserted that cognitive style and culture may not be related (Kubes, 1998) whilst others have asserted that there are cross-national differences in cognitive style. Furthermore, at secondary and tertiary levels there is research evidence to suggest that East Asian learners, exhibit more effective learning styles and academic performance than their western counterparts (Biggs 1991). One possible explanation to account for these differences in learning style may be the differences in approaches to studying between cultural groups. Indeed, Smith (2000) reported such differences between Australian and Chinese University students, using Ramsden and Entwistle's (1983) Approaches to Studying Inventory (ASI). Furthermore, Turner (2000) assessed the learning approaches of students from the People's Republic of China studying at degree level both in the UK and in a UK-franchised degree program in Beijing and concluded that students from China approach learning in the UK system with a culturally different learning style from
that of British-educated students. Accordingly, differences in cognitive style may contribute to the way in which a learner approaches and engages with e-Learning.

With respect to gender Riding (2000) reports that in terms of the analytic-wholist cognitive style (similar to the analysts-intuitive cognitive style), differences tend to be small and non-significant. However, he also suggests that males tend to be slightly more analytic than females.

Overall then, it would appear to be useful to approach an exploration of individual differences in computer use for instruction, by looking at three major factors, namely nationality, gender, and cognitive learning style.

e-Learning in Thailand

There are 63 million people in Thailand (PRB, 2003). Of those, the International Telecommunication Union reports that only 3.5 million were using the Internet in 2001 (Asian e-Learning Network, 2003). This figure, however, is posed to rapidly explode as the Thai government presses forward with its plans to connect the nation’s schools to the Internet and promote the development of the nation’s communication infrastructure as a whole.

As schools and universities provide greater exposure to the Internet and its many services to Thai learners, the potential for impacting the Thai economy and society is significant.

In 1964 an IBM 1620 was installed at Chulalongkorn University and signified Thailand’s entrance into the Computer Age (Charmonman & Chorpothon,
Since that time, an estimated three million computers have been purchased and deployed throughout the country (Charmonman & Chorpothon, 2002). As a result of this ever increasing growth of networks and technologies, Thailand currently ranks 37th overall in terms of e-Learning readiness when compared against other nations around the world (EIU, 2003).

To improve their current position and enhance the educational system in general, the Thai government is pushing industry and educational institutions alike to integrate more and more technologies into their daily operations (Asia Times, 2003). This continued migration towards an information technology oriented society will further compound the growth rate of Internet users throughout the country.

In 1994, Thailand joined the Internet connected world with a significant portion of its users found on Assumption University's campus. From these early days, however, nationwide usage has grown to over 1.2 millions in 2002 (NUA, 2002) and a projected 12.0 million in 2006 (Charmonman & Chorpothon, 2002). The majority of these users, however, utilize the Internet for a very small portion of its overall potential.

As of 2002, approximately 20% of Thailand's 70+ universities were offering some form of e-Learning / Distance Education programs in Thailand with most of these offerings involving broadcasting of video from one institution to another versus utilization of Internet-based e-Learning environments (Asian e-Learning Network, 2003). The 20% figure is continuously growing however as numerous higher education institutions are expanding their online presence.
E-Commerce, on the other hand, is far less developed. In 2000, less than 50 local Thai firms were engaged in e-Commerce and the majority of their e-Commerce transactions are limited to the banking and airline industries with most of the transactions occurring at the business-to-business level versus business-to-consumer (Southern, Schwartz, & Veeramachaneni, 2000). Part of the consumers’ reluctance to purchase goods online relates to their fears about Internet security and the possibility of credit card theft/fraud. Fears such as these also were encountered in western countries during their early stages of Internet adoption.

Since then, consumers in western countries have largely overcome these fears and readily adopted e-Commerce as a normal part of their everyday lives. This is evidenced by the estimated $5 trillion in Internet related sales projected by Forrester Research for 2004 (Advisor.Com, 2004). Thailand, in all likelihood, will follow a similar course of adoption; the rate of this adoption however will be influenced, no doubt, by cultural factors.

2.5 Previous Studies

Graff, Davis and McNorton (2003) investigated individual differences such as nationality, and gender with respect to computer use generally, as a means of informing e-learning instructional design. A total of 170 undergraduate students (103 Chinese and 67 UK) completed the Cognitive Styles Index (Allinson and Hayes, 1996), a computer attitude scale (Smalley, Graff and Saunders, 2001), and also a
questionnaire on their knowledge of the Internet and how effectively they used the Internet.

A two way multivariate ANOVA was calculated to examine the effects of nationality and age on computer attitude scores (CAS), Internet knowledge, ease and hours of scores and scores for cognitive style. There was no significant main effect of nationality on overall computer attitude scores, however there was a significant main effect on the behavioral component of CAS scores ($F_{1,146} = 10.13, p < 0.01$). An analysis of the means reveals that Chinese participants had significantly lower behavioral attitude scores than UK participants, means of 24.44 and 27.04, respectively. Therefore, the Chinese participants had a more positive behavioral attitude towards computers.

There was no main effect of age on the overall CAS scores, however, an analysis of the means reveals that the lowest age band had significantly lower scores on the affective and cognitive attitude subscales than the highest age band (mean affective 34.54 and 38.00, mean cognitive 23.78 and 26.92, respectively). Therefore, the 17-19 years age group had significantly more positive affective and cognitive attitudes towards computers. Finally, this study also found a difference in self-reported Internet use between UK and Chinese students, with the Chinese students reporting greater use. However, no differences between UK and Chinese students were found for Internet knowledge or ease of use scores.

In another study conducted by Suanpang (2003) on students' experience with online learning in Thailand, the researcher compared online learning with
traditional teaching for the course of Business Statistics conducted over 16 weeks. Qualitative methods used in this study included in-depth interviews, student diaries, messages from the discussion boards and comments on course appraisals. There were approximately 1,000 students enrolled in this subject and of these 269 volunteered to participate in the research. The research group included students studying in two modes, online and traditional, and in two locations, campus-based and distance.

In the traditional format, the researcher found that students who had good background in mathematics found that this subject was not difficult to learn. In contrast, students who did not have good background in mathematics found the subject difficult, and had negative attitude before entering the course. In contrast, online students had more experience with searching external sources, collecting, manipulating and representing data. Instead of spending most of their time learning and memorizing formulae and techniques, students were given the chance to conduct real investigations and gain experience of the wide applicability of statistical methods. In the traditional groups, it was found that students did most of their study during the lecture times, and carried out the exercises by themselves; however, they benefited from increased access to technology in order to assist their learning. In the online groups, students used the online mode for reading course materials, doing exercises, searching for information, taking quizzes, and communicating with other students and online instructors.
Online students seemed to be more able to comprehend the statistics context, to apply statistical ideas to their daily life, and to evaluate and guide their own work. The results also found that online students had more effective communication (both asynchronous and synchronous) and higher level interactions than students in the traditional groups. Moreover, online collaborative learning offered the opportunities for students to share with others their thinking, interpretation, and reaction to the ideas that are being presented.

Mahmod et al. (2005) studied Attitudinal Belief Adoption of e-MBA Programs in Malaysia. Two hundred individuals were selected to participate in the survey through purposive sampling. The target group came from bachelor degree students from various background of study. Each individual was asked to complete a self-administered questionnaire survey. The objective of this study was to determine the success factors that contributing to the potential user acceptance towards new technology adoption, focusing on education trend, particularly in e-MBA.

In examining the influence of independent variables (attitudinal belief - perceived usefulness, trialability, result demonstrability, image, and enjoyment) on mediator variable (attitude) towards e-MBA adoption, it was found that all five of the attitudinal belief dimensions were positively related to attitude towards e-MBA adoption. The findings of this study suggest that attitude of potential user towards e-MBA program was positively influenced by perceived usefulness towards the program, an opportunity for trial usage given by the provider, retrieval of results of
the progress made by student, assisting them to have a good image and feeling an enjoyment with the program.

The study showed that all five of the attitudinal belief factors were also significant with the attitude towards behavior intention for new technology, e-MBA adoption. This means that e-MBA program providers should focus on these factors that affect students' attitudinal belief and which influence them to enroll in e-MBA programs. Further, this study also indicated that the Internet can be a powerful tool in education. This tool has the potential both to support effective education programs and to expose student to the implications of information systems.

O'Malley and McCraw (2005) conducted a study on Students Perceptions of Distance Learning, Online Learning and the Traditional Classroom. The goal of their research was to better understand student perceptions of the effectiveness of these two teaching methodologies. In addition, their research investigated dimensions of distance and on-line learning that they believed are perceived by students as providing advantages over the traditional teaching methodology. Using a survey with 128 items, a seven point Likert scale with strongly agree and strongly disagree as anchoring points was used.

The survey was then administered to students at the participating university in a variety of business courses including management, accounting, finance, and information systems courses. A total of 128 questionnaires were collected. Approximately 54% of the respondents were female and 46% were male with an average age of 23.6 years. The majority of respondents (64%) had taken an Online
(OL) course and a large minority (48%) had taken a Distance Learning (DL) course. A slightly larger percentage (67%) of the respondents had taken a course that combined traditional and OL methodologies. In a similar vein, 49.2% of the respondents had taken a course that combined traditional and DL methodologies.

The students ranged from sophomores to graduate students with juniors accounting for 62.5% and seniors representing 29% of the respondents. The remaining 8.5% of the respondents were either sophomores or graduate students. The results of the survey of 128 students indicated that students do not perceive that OL and DL are similar, so separate analysis were conducted.

The research indicated that students perceive that OL has a significant relative advantage to traditional methodologies. These advantages included saving them time, fitting in better with their schedules, and enabling students to take more courses. They did not believe that they learn more in OL courses and had concerns related to being able to contribute to class discussions. Interestingly, the students seem to be ambiguous when comparing OL to traditional methodologies. They prefer traditional courses to OL courses although they want more OL courses.

Students seemed to have much more negative beliefs about DL than OL. Generally, students did not perceive that DL is as effective as traditional methodologies. The only perceived benefit of DL is that of working well with their schedules. In addition, students did not want to take more DL courses.
This chapter focuses on the frameworks of this research. The elaboration of the conceptual model is discussed in section one. Section two explains all hypothesis statements that were posed in this research and section three provides information on the concepts and variables in the table of operationalization.

3.1 Theoretical Framework

This research is based on three theoretical frameworks which are: The Tricomponent Theory of Attitude, Behavior Intention Model, and Student Perception Model, which are as follows:

3.1.1 The Tricomponent Model: Affective, Cognition and Conation

For understanding consumers, it is more useful to emphasize the interactions between the affective, cognitive and conative systems than to argue about which system is more important or dominant. Figure 3.1 presents a simple model to illustrate how the two systems are related. Each system can respond independently to aspects of the environment, and each system can respond to the output of the other system. For instance, the affective responses (emotions, feelings, or moods) produced by the affective system in reaction to stimuli in the environment can be
interpreted by the cognitive system. These cognitive interpretations, in turn, might be used to make decisions.

Figure 3.1: Relationship between Affect, Cognition and Conation Systems

3.1.2 A Model of Behavior Intention

Consumers must interpret or make sense of information in the environment around them. In the process, they create new knowledge, meanings and beliefs about the environment and their place in it. Interpretation processes require exposure to information and involve two related cognitive processes: attention and comprehension. Attention governs how consumers select which information to interpret and which information to ignore. Comprehension refers to how consumers determine the subjective meanings of information and thus create personal knowledge and beliefs.

The terms knowledge, meanings, and beliefs interchangeably to refer to the various types of personal or subjective interpretations of information produced by interpretation processes. Figure 3.2 shows that knowledge, meanings, and beliefs may be stored in memory and later retrieved from memory (activated) and used in integration processes.
Figure 3.2: A Cognitive Processing Model of Consumer Behavior Intention

ENVIRONMENT

INTERPRETATION PROCESSES

Attention
Comprehension

MEMORY

Knowledge, meanings, and beliefs

INTEGRATION PROCESSES

Attitudes

BEHAVIOR INTENTION

Knowledge, meanings, and beliefs

Integration processes concern how consumers combine different types of knowledge (1) to form overall evaluations of products, other objects, and behaviors, and (2) to make choices among alternative behaviors, such as a purchase. In the first instance, consumers combine knowledge and affective feelings about a product or a brand to form an overall evaluation or a brand attitude. Consumers also engage in integration processes when they combine knowledge and affective responses to choose a behavior. When consumers choose between different purchase behaviors, they form an intention or plan to buy. Integration processes also are used to make choices among other behaviors besides purchase. For instance, a consumer might integrate knowledge in deciding when to go on a shopping trip, whether to pay with a check or a credit card or whether to recommend a movie to a friend.

Product knowledge and involvement concern the various types of knowledge, meanings, and beliefs that are stored in consumers' memories. For example, consumers may have product knowledge about the characteristics or attributes of a brand of athletic shoe (gel inserts in the heel), the outcomes of using the brand (I can run faster), or the ability of the brand to satisfy important objectives (I shall be fit). Product knowledge that is retrieved from memory has the potential to influence interpretation and integration processes. For example, consumers need a certain amount of knowledge about nutrition to interpret and understand the many health claims made by food companies. Product involvement refers to consumers' knowledge about the personal relevance of the product in one's life (nutrition information is important to my health goals). People's level of involvement with
health issues will influence how much effort they exert in interpreting a nutritional message.

From the theoretical frameworks stated above, it is found that behavior intention is related to attitude so this study examined the relationship between the university students' attitude and their intention to study via e-Learning and study the differences in respondents' demographic factors, age and grade point average and their intention to study via e-Learning.

3.1.3 Student Perception Model

This model, developed by O'Malley and McCraw (2005) was constructed to study student perceptions of the effectiveness of Distance and Online Learning. Perceived effectiveness was chosen because of (1) the difficulties of measuring learning (must have a control and experimental group over time in a controlled setting), (2) student perceptions may be more important than reality, i.e., decisions, many times, are based on perceptions, and (3) perceived learning will contribute to the knowledge of learning effectiveness.

The modified constructs were (1) prior educational conditions, (2) characteristics of students, and (3) perceived characteristics of Distance and Online Learning. The model is shown below:
There are multiple facets for each of the four constructs in Figure 3.3. For example, for prior educational conditions, there are facets such as previous educational practice, student felt needs, and sociological changes. For characteristics of the student, facets include demographic characteristics and learning outcomes. For perceived characteristics of distance and on-line learning, facets include relative advantage, student compatibility, and course compatibility. Finally, grades and schedule are facets of perceived effectiveness of distance and on-line learning.

3.2 Conceptual Framework

Conceptual model is any high formalized representation of a theoretical framework, usually designed through the use of symbols or other such physical
analogs (Kinnear and Taylor, 1996) Models can be used as representations of theoretical systems so that they can be tested, examined, and generally analyzed.

In this part of the study, the researcher draws on the previous empirical research and relevant theories necessary to develop the conceptual framework of the research. The conceptual model explicates the perception and attitude of student toward Intention to study via e-Learning. Figure 3.4 depicts conceptual model employed in this study as follows:

**Figure 3.4: The Conceptual framework**

**Independent variables**

- Perception
- Attitude
  - Cognitive
  - Affective
  - Conative

**Demographic variables**

- Gender
- Grade point average
- Age

**Dependent variables**

Intention to study via e-Learning
Section 2: Hypothesis Statements

According to Zikmund (2000), a hypothesis is defined as an unproven proposition or supposition that tentatively explains certain facts or phenomena; a probable answer to a research question. Hypothetical statements assert probable answer to research question. In this section of the research study, the hypotheses of the study are stated in a testable form: the null and alternative hypotheses. It also predicts a particular relationship between two or more variables. Hypotheses are used in the deductive research approach where the conceptual developments are focused on first prior to the empirical testing. In this research, three main groups of independent variables are hypothesized against the dependent variables as follows:

**Group A: Difference between Demographic factors and Intention to study via e-Learning.**

Ho1: There is no difference between gender and Intention to study via e-Learning.

Ha1: There is a difference between gender and Intention to study via e-Learning.

Ho2: There is no difference between grade point average and Intention to study via e-Learning.

Ha2: There is a difference between grade point average and Intention to study via e-Learning.

Ho3: There is no difference between age and Intention to study via e-Learning.
Ha3: There is a difference between age and Intention to study via e-Learning.

**Group B: Relationship between Students’ attitude and Intention to study e-Learning**

Ho4: There is no relationship between students’ cognition and Intention to study via e-Learning.

Ha4: There is a relationship between students’ cognition and Intention to study via e-Learning.

Ho5: There is no relationship between students’ affect and Intention to study via e-Learning.

Ha5: There is a relationship between students’ affect and Intention to study via e-Learning.

Ho6: There is no relationship between students’ conation and Intention to study via e-Learning.

Ha6: There is a relationship between students’ conation and Intention to study via e-Learning.

**Group C: Relationship between perception and Intention to study e-Learning**

Ho7: There is no relationship between students’ perception and Intention to study via e-Learning.

Ha7: There is a relationship between students’ perception and Intention to study via e-Learning.
3.3 Operationalization of Variables

Davis and Cosenza (1993) mentioned that concepts could be defined as abstract ideas generalized from particular facts. Without concept, there can be no theory. In addition, Zikmund (2000) stated that concept is defined as a generalized idea about a class of objects, attributes, occurrences, or processes. In this research, the concepts are made operational so that they can be measurable. The operational definition refers to an explanation to measure it (Zikmund 2000). The operational definitions give empirical meaning to constructs by specifying the means by which the concept will be measured in reality. Thus, the operational definition specifies what must be done to measure the concept under investigation. Table 3.1 shows the operational components of the independent variables or influencing variables.

Table 3.1: Operational Components of the Independent Variables or Influencing Variables

<table>
<thead>
<tr>
<th>Concept</th>
<th>Concept Definition</th>
<th>Operational Component</th>
<th>Type of Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>factors: Gender</td>
<td>Sex identification of one person.</td>
<td>- Male or Female</td>
<td>Nominal Scale</td>
</tr>
<tr>
<td>Age</td>
<td>Number calculating the life of one person.</td>
<td>- Duration of life specific to one people.</td>
<td>Ordinal Scale</td>
</tr>
<tr>
<td>Grade point average</td>
<td>Point average whole subjects from first academic year until the last academic year.</td>
<td>-1.00-1.99</td>
<td>Ordinal Scale</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-2.00-2.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-3.00-4.00</td>
<td></td>
</tr>
<tr>
<td>Perception</td>
<td>Perception is defined as a process by which people give meaning to external stimuli or sensations.</td>
<td>Students' perceived opinion of characteristics and benefits of e-Learning</td>
<td>Likert Scale</td>
</tr>
<tr>
<td>Attitude</td>
<td>An enduring motivational, emotional, perceptual, and cognitive process with respect to some aspect of our environment.</td>
<td>- Cognitive - Affective - Conative</td>
<td>Likert Scale</td>
</tr>
</tbody>
</table>
Table 3.2: Operational components of the dependent variables or explained variables

<table>
<thead>
<tr>
<th>Concept</th>
<th>Concept Definition</th>
<th>Operational Component</th>
<th>Type of Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to study e-Learning</td>
<td>Study of how individuals make decision to study e-Learning.</td>
<td>-Know and understand e-Learning. - Purpose of e-Learning</td>
<td>Likert Scale</td>
</tr>
</tbody>
</table>
Chapter IV

Research Methodology

The chapter is aimed at explaining the research process. It describes the research method used, respondents and sampling procedures, research instruments or questionnaires, collection of data or gathering procedures and statistical treatment of data.

4.1 Research Method

This research was envisaged as a descriptive study, whereby the researcher used self-administered questionnaires for collecting the information obtained from the respondents in the sampling unit. The research employed a survey technique in order to collect primary data from a sample of undergraduate students in Assumption University in the fourth year (senior) students of Assumption University belonging to two faculties; BBA (School of Management) and BSc (Faculty of Science and Technology). The students who were sampled were those who were expected to graduate in semester (1/2005). Surveys provides quick, inexpensive, efficient, and accurate means of assessing information about a population (Zikmund, 2000).
4.2 Respondents and Sampling Procedures

4.2.1 Target Population

Neuman (2000) stated that the target population is the units in the population that researcher wishes to study. In this study, the researcher chose the fourth year (senior) students of Assumption University belonging to two faculties; BBA and BSc. In each faculty, students taking a senior graduating course were selected as respondents. For BBA, the subject was BP 4914 Entrepreneurship and for BSc., the course selected was IT 2210 File Structures and Procedures. The total numbers of sections for BP 4914 Entrepreneurship are 13, and the total number of sections for IT 2210 File Structure and Procedure are 2 (Office of the Registrar, Assumption University, 2005). The sections are as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Day Program section</th>
<th>Evening Program section</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship</td>
<td>12</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>File Structure and Procedure</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total sections</strong></td>
<td></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

The approximate number of students in each section of Entrepreneurship is 60 students and in File Structure and Procedure the number is 50 students (Office of the Registrar, Assumption University, 2005). So the target population is 880 undergraduate students in the fourth year (senior) students of Assumption University belonging to two faculties; BBA and BSc.
4.2.2 Sampling Element

Sampling is a procedure using a small number of units of a given population as a basis for drawing conclusions about the whole population (Churchill, 1999). There are a variety of ways to choose persons or cases to include in a sample. In probability sampling, there is equal chance for any particular member of the population to be chosen.

The researcher used simple random sampling in which each person has an equal chance of being selected for participation and where each combination of participants is equally similar. The researcher randomly selected 8 sections from 15 sections (6 sections from Day program and 1 section from evening program) from Entrepreneurship (BP 4914) and 1 section from File Structure and Procedure (IT 2210) classroom. The results are as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Section</th>
<th>Total Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship (Day program)</td>
<td>1, 402, 405, 406, 408, 411</td>
<td>6</td>
</tr>
<tr>
<td>Entrepreneurship (Evening program)</td>
<td>901</td>
<td>1</td>
</tr>
<tr>
<td>File Structure and Procedure</td>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td></td>
</tr>
</tbody>
</table>

After determining the sample elements, researcher used quota sampling method by selecting 350 samples of students in Entrepreneurship (BP 4914) from 7
sections and 50 samples of students in File Structure and Procedure (IT 2210) from 1 section. Total sample of respondents is equal to 400 students.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Section</th>
<th>No. of Respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>402</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>405</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>406</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>408</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>411</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>901</td>
<td>50</td>
</tr>
<tr>
<td>File Structure and Procedure</td>
<td>51</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

As mentioned previously, the respondents were selected because they are the group with the highest potential to enroll for e-Learning programs (CIDE, 2005).

4.2.3 Sample size

The researcher determined the number of respondents by using Krejcie and Morgan's table of sample size of known population so the sample selected for this research was 263 students in the fourth year (senior) students of Assumption University belonging to two faculties; BBA and BSc. Total students who expect to
graduated in this semester (1/2005) are 900 students (see table 4-1) by fraction calculation.

$$\text{Sample} = \frac{269}{900} = \frac{n}{880}$$

Table 4-1 Population and Sample Size of Krejcie and Morgan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>150</td>
<td>108</td>
<td>460</td>
<td>210</td>
<td>2200</td>
<td>327</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>14</td>
<td>160</td>
<td>113</td>
<td>480</td>
<td>214</td>
<td>2400</td>
<td>331</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>19</td>
<td>170</td>
<td>118</td>
<td>500</td>
<td>217</td>
<td>2600</td>
<td>335</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>24</td>
<td>180</td>
<td>123</td>
<td>550</td>
<td>226</td>
<td>2800</td>
<td>338</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>28</td>
<td>190</td>
<td>127</td>
<td>600</td>
<td>234</td>
<td>3000</td>
<td>341</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>32</td>
<td>200</td>
<td>132</td>
<td>650</td>
<td>242</td>
<td>3200</td>
<td>346</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>36</td>
<td>210</td>
<td>136</td>
<td>700</td>
<td>248</td>
<td>3400</td>
<td>351</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>40</td>
<td>220</td>
<td>140</td>
<td>750</td>
<td>254</td>
<td>3600</td>
<td>354</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>44</td>
<td>230</td>
<td>144</td>
<td>800</td>
<td>260</td>
<td>3800</td>
<td>357</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>48</td>
<td>240</td>
<td>148</td>
<td>850</td>
<td>265</td>
<td>4000</td>
<td>361</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>52</td>
<td>250</td>
<td>152</td>
<td>900</td>
<td>269</td>
<td>4200</td>
<td>362</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>56</td>
<td>260</td>
<td>155</td>
<td>950</td>
<td>274</td>
<td>4400</td>
<td>364</td>
<td></td>
<td></td>
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<tr>
<td>70</td>
<td>59</td>
<td>270</td>
<td>159</td>
<td>1000</td>
<td>278</td>
<td>4600</td>
<td>367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>63</td>
<td>280</td>
<td>162</td>
<td>1100</td>
<td>285</td>
<td>4800</td>
<td>368</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>66</td>
<td>290</td>
<td>165</td>
<td>1200</td>
<td>291</td>
<td>5000</td>
<td>369</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>70</td>
<td>300</td>
<td>169</td>
<td>1300</td>
<td>297</td>
<td>5200</td>
<td>370</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>73</td>
<td>320</td>
<td>175</td>
<td>1400</td>
<td>302</td>
<td>5400</td>
<td>371</td>
<td></td>
<td></td>
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<tr>
<td>95</td>
<td>76</td>
<td>340</td>
<td>181</td>
<td>1500</td>
<td>306</td>
<td>5600</td>
<td>372</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>80</td>
<td>360</td>
<td>186</td>
<td>1600</td>
<td>310</td>
<td>5800</td>
<td>373</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>86</td>
<td>380</td>
<td>191</td>
<td>1700</td>
<td>313</td>
<td>6000</td>
<td>374</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

62
4.3 Research Instrument/Questionnaire

Davis and Cosenza (1993) stated that the central objective of a survey design is to search for relationship between variables. It usually depends upon the use of a well-constructed questionnaire which is employed to collect data from the relevant unit of analysis under study, usually, an individual.

This research used a questionnaire to gather the information from the respondents. The questionnaire was constructed by the researcher based on the theoretical framework and previous studies. All questions correspond to the statement of problems and hypotheses. The questionnaire consisted of 4 parts as follows:

Part 1: This part was used to measure attitudes toward e-Learning. A 5-point Likert scale is used from Strongly agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2 and Strongly disagree = 1. A total of 15 questions is classified into 3 groups:

- Cognitive 5 questions;
- Affective 5 questions;
Conative 5 questions.

Part 2: 7 questions covered intention to study via e-Learning. A 5-point Likert scale is used from Strongly agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2 and Strongly disagree = 1.

Part 3: Perception toward e-Learning was designed with 5 questions in the form of 5-point Likert scale is used from Strongly agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2 and Strongly disagree = 1.

Part 4: The Demographic questionnaire was designed to identify personal characteristics, such as sex, age, and grade point average.

4.4 Pretests

Zikmund (2000) stated that in order to avoid the problem of respondent’s misunderstanding a question, skipping a series of questions or misinterpreting the instructions for filling out the questionnaires, screening procedures or pretests are often utilized. Pretests are vital and are defined as trial runs with a group of respondents for the purpose of detecting problems in the questionnaire instructions or design. In the pretest, the researcher looks for evidence of ambiguous questions and respondent misunderstanding, whether the question means the same thing to all respondents and other considerations.
Sekaran (2000) indicated that the first consideration is the number of respondents needed for a pilot study. If the questionnaires contain several opinion items which make up one or more theoretical scales, to conduct an analysis, an investigator needs a ratio of respondents to items between 4:1 and 10:1. So, the researcher distributed 40 questionnaires to the target respondents for pilot study. These were students studying in their final year in the Faculty of Computer Engineering, Hua Mak campus.

After collecting the data, the researcher examined the reliability of this questionnaire by using Cronbach Alpha scores in SPSS program. Sekaran (1992) mentioned that if the alpha value is at least 0.60, it is considered reliable. In this research, the alpha values are as follows:

Part 1: Attitude toward e-Learning = 0.8843
Part 2: Intention to Study via e-Learning = 0.8787
Part 3: Perception toward e-Learning = 0.8595

4.5 Data Collection/Gathering Procedures

In this study, the researcher selected 8 sections, of which 7 sections were Entrepreneurship (BP 4914) and 1 section was File Structure and Procedure (IT 2210). The process of data collection in this study was as follows:

1. The researcher obtained written permission from the Deans of BBA and B.Sc. to conduct research.
2. The researcher requested students in the selected sections to fill in the questionnaires after the lecturers had finished teaching their classes.

3. Data was collected during 7-16 August, 2005 at both campuses, Hua Mak and Bang Na.

Secondary data was collected from several sources including textbooks on marketing, customer decision making, customer attitude and business research methods, journals and previous research from libraries and other places. Moreover, additional information was collected from the Internet.

4.6 Data Analysis

The completed questionnaires returned from all fieldwork will be coded and the data analyzed by SPSS. The following table indicates the statistical technique that was used:

Independent sample t-test, a technique used to test the hypothesis stating that the mean scores on some interval-scaled or ratio-scaled variable will be significantly different for two independent samples or groups. To use the t-test for different means, it is assumed that the two samples are drawn from normal distributions (Zikmund 2000).

To calculate $t$, the following formula is used:

$$ t = \frac{Mean_1 - Mean_2}{\text{Variability of random means}} $$
\[ t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \]

where;
- \( \bar{X}_1 \) = mean of group 1
- \( \bar{X}_2 \) = mean of group 2
- \( S_1^2 \) = the variance of the group 1
- \( S_2^2 \) = the variance of the group 2
- \( n_1 \) = the sample size of the group 1
- \( n_2 \) = the sample size of the group 2

In a test of two means, the degree of freedom are calculated as follows:

\[ df = n_1 + n_2 - 2 \]

The next equation drops the second part of the numerator in the above equation (the part that is almost always zero) and substitutes the calculation equation for the standard error of the difference to arrive at our calculation formula for the independent samples t statistic.

Independent t statistic calculation formula:

\[ t = \left( \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\Sigma x^2_1 - (\Sigma x_1)^2}{n_1} + \frac{\Sigma x^2_2 - (\Sigma x_2)^2}{n_2}} \left( \frac{1}{n_1} + \frac{1}{n_2} \right) \left( \frac{1}{n_1} \right) + \left( \frac{1}{n_2} \right)} \right) \]
The independent t test formula conforms to that same format. The figure summarizing these similarities reproduced below, with the addition of the independent t test formula.

ANOVA or F-test. When the means of more than two groups or populations are to be compared, one way analysis of variance (ANOVA or F-test) is the appropriate statistical tool. The F-test determines whether there is more variability in the scores of one sample than in the scores of another sample. The key question is whether the two sample variances are different from each other or are from the same population (Zikmund 2000). The formula is:
\[ F = \frac{MS_b}{MS_w} \]

Where

\[ F = \text{F distribution} \]
\[ MS_b = \text{Mean square between groups} \]
\[ MS_w = \text{Mean square within groups} \]

Table 4.1: Summary for analysis of variance

<table>
<thead>
<tr>
<th>Source of variable</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between group</td>
<td>SSb</td>
<td>P-1</td>
<td>SSb/dfb = MSb</td>
<td>MSb</td>
</tr>
<tr>
<td>Within group</td>
<td>SSw</td>
<td>N-P</td>
<td>SSw/d = MSw</td>
<td>MSw</td>
</tr>
<tr>
<td>Total</td>
<td>SSt</td>
<td>N-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where;

\[ P = \text{Number of sample} \]
\[ N = \text{Number of population} \]

The protected \( t \) test:

It is performed only when the omnibus \( F \) is significant.

It uses a more stable estimate of the population variance than the \( t \) test (i.e., \( MS_w \) instead of \( S_{x-x_1} \) and as a result the df is greater.

This technique is protected because it requires the omnibus \( F \) to be significant (which tells us there is at least one comparison between means that is significant). So, in other words, it is protected because we are not just shooting in the dark.
The formula is:

\[ F_{\text{Comp}} = \frac{\left( \bar{X}_1 - \bar{X}_2 \right)^2}{\text{MS}_w \left( \frac{1}{n_1} + \frac{1}{n_2} \right)} \]

(Where the dfs are 1 for the numerator and df\(_w\) for the denominator.)

**Pearson product moment coefficient of correlation.** Correlation analysis involves measuring the closeness of the relationship between two or more variables; it considers the joint variation of two measures, neither of which is restricted by the experimenter (Churchill, 1999).

The concept of simple correlation provides a measure of the relationship between two variables, which the Pearson product moment correlation coefficient is used for this study. The correlation coefficient can be expressed as follow:

\[
r_{xy} = \frac{n \cdot xy - (\sum x \cdot \sum y)}{\sqrt{\left[ n \cdot x^2 - (\sum x)^2 \right] \left[ n \cdot y^2 - (\sum y)^2 \right]}}
\]

When \( r_{xy} \) = The correlation coefficient between \( x \) and \( y \)

\( N \) = The size of sample

\( n \) = The number of sample

\( x \) = The individual’s score on the \( x \) variable

\( y \) = The individual’s score on the \( y \) variable

\( xy \) = The product of each \( x \) score time its corresponding \( y \) score

\( x^2 \) = The individual \( x \) score, square
$y^2$ = The individual $y$ score, square

Table 4.2: Summary of Hypotheses and Statistical Analyses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho1: There is no difference between gender and Intention to study via e-Learning.</td>
<td>Independent Sample t-Test</td>
</tr>
<tr>
<td>Ha1: There is difference between gender and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ho2: There is no difference between grade point average and Intention to study via e-Learning.</td>
<td>One Way ANOVA</td>
</tr>
<tr>
<td>Ha2: There is difference between grade point average and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ho3: There is no difference between age and Intention to study via e-Learning.</td>
<td>One Way ANOVA</td>
</tr>
<tr>
<td>Ha3: There is difference between age and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ho4: There is no relationship between students’ cognition and Intention to study via e-Learning.</td>
<td>Pearson product moment coefficient of correlation</td>
</tr>
<tr>
<td>Ha4: There is a relationship between students' cognition and Intention to study via e-Learning.</td>
<td>Pearson product moment coefficient of correlation</td>
</tr>
<tr>
<td>Ho5: There is no relationship between students’ affect and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ha5: There is a relationship between students’ affect and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ho6: There is no relationship between students’ conation and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ha6: There is a relationship between students’ conation and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ho7: There is no relationship between perception and Intention to study via e-Learning.</td>
<td></td>
</tr>
<tr>
<td>Ha7: There is a relationship between perception and Intention to study via e-Learning.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter V
Data Presentation and Critical Analysis of Results

This chapter presents the results from data analysis and interpretation of findings on various aspects. It will be divided into three main parts. The first part presents the demographic profile of respondents. The second part contains the hypotheses testing results. And the third part displays attitude of respondents toward the dependent variable, which is intention to study via e-Learning.

5.1 Demographic Characteristic

Descriptive statistics for this research is employed for describing the primary data of respondents’ demographic profile. In descriptive analysis, the raw data are presented in terms of frequency and percentage. These data include demographic information, namely age, gender, and grade point average.

5.1.1 Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>122</td>
<td>30.5</td>
</tr>
<tr>
<td>Female</td>
<td>278</td>
<td>69.5</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The gender of respondents was principally female, there were 278 respondents or 69.50%, who were female. Whereas, 122 respondents, or 30.5% of the total respondents, were male.

5.1.2 Grade Point Average

<table>
<thead>
<tr>
<th>Grade Point Average</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.01 - 3.00</td>
<td>346</td>
<td>86.5</td>
</tr>
<tr>
<td>3.01 - 4.00</td>
<td>54</td>
<td>13.5</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The largest group of surveyed population was 346 respondents, or 86.5%, whose grade point average was between 2.01-3.00. While, 54 respondents, or 13.5% of all surveyed respondents, have a grade point average between 3.01-4.00.

5.1.3 Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 years old</td>
<td>38</td>
<td>9.5</td>
</tr>
<tr>
<td>21 years old</td>
<td>179</td>
<td>44.8</td>
</tr>
<tr>
<td>22 years old</td>
<td>126</td>
<td>31.5</td>
</tr>
<tr>
<td>23 years old</td>
<td>57</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>100.0</td>
</tr>
</tbody>
</table>

There were 179 respondents or 44.8% of all respondents whose ages were 21 years old. This age level forms the largest portion of the population. There were
126 respondents or 31.5% who were 22 years old, 57 respondents or 14.3% are 23 years old. While, the minority group was the group of 38 respondents whose ages were 20 years old representing only 9.5%.

5.2 Hypotheses Testing

Group A: Difference between Demographic factors and Intention to study via e-Learning.

In this part, the Independent-Sample T-test was brought into use in finding out if there are differences between demographic factors in terms of intention to study via e-Learning.

In proving the difference by employing Independent-Sample T-test mode, the test of equality of variance of two variables should be made before evaluating the t-test for equality of means. Levene’s Test was used in choosing which variance condition should first be used then the T-test would be concentrated in proving the difference.

Hypothesis 1 : There is a difference between gender and Intention to study via e-Learning.

Ho1: There is no difference between gender and Intention to study via e-Learning.
Ha1: There is a difference between gender and Intention to study via e-Learning.
Table 5.2: Test Two Variables between Gender and Intention to study e-Learning

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test For Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Intention to Study via e-Learning</td>
<td>Equal variances assumed</td>
<td>.327</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
</tr>
</tbody>
</table>

Since, the p-value of Levene’s test for equality of variances was 0.568, which was greater than the significance level of 0.05, the null hypothesis was accepted. Thus, *the equal variance was assumed.*

From the t-test for equality of means, *the p-values of the t-test for equality of mean* was equal to 0.121, which was greater than the significance level of 0.05, so, the null sub-hypothesis was accepted. Thus, it could be concluded that there is no significant difference between gender in terms of intention to study via e-Learning.
Hypothesis 2: There is a difference between grade average point and Intention to study via e-Learning.

Ho2: There is no difference between grade average point and Intention to study via e-Learning.

Ha2: There is a difference between grade average point and Intention to study via e-Learning.

Table 5.2.1: Test Two Variables between Grade average point and Intention to study e-Learning

<table>
<thead>
<tr>
<th>Levene's Test</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Equality of Variances</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.054</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>1.227</td>
</tr>
</tbody>
</table>
From the above table, the p-value of Levene's test for equality of variances was equal to 0.816, which was greater than the significance level of 0.05, the null hypothesis was accepted. Thus, the equal variances assumed was used.

And the t-test for equality of means showed that the p-values of the t-test for equality of mean was 0.245, which was greater than the significance level of 0.05, so, the null sub-hypothesis was accepted. This could imply that there is no significant difference between grade average point and intention to study via e-Learning.

**Hypothesis 3**: There is a difference between age and Intention to study via e-Learning.

In this part, the one-way ANOVA was used to determine the relationship between 4 groups of respondents' age in terms of intention to study via e-Learning.

The null hypothesis will be rejected when Sig. or p-value is less than α, 0.05 significance level.

Ho3: There is no difference between age and Intention to study via e-Learning.

Ha3: There is a difference between age and Intention to study via e-Learning.

**Table 5.2.2: Test Two Variables between Age and Intention to study e-Learning**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to Study via E-learning F</td>
<td>1.762</td>
</tr>
<tr>
<td>Sig.</td>
<td>.154</td>
</tr>
</tbody>
</table>
From the above table, there was no significant difference in the response of four age groups of respondents. As the p-values displayed in the table was equal to 0.154, which was more than 0.05 significance level, the null hypothesis was accepted. This could imply that there is no significant difference between age and intention to study via e-Learning.

**Group B: Relationship between Students’ attitude and Intention to study e-Learning**

To examine the relationship between two variables, the Bivariate Correlation test (Pearson Correlation) is used for testing the hypotheses, and the level of significance in all hypotheses tests in this study is 0.05. Each correlation result level of measurement will be interpreted as follows:

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Interpretation of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>High positive correlation</td>
</tr>
<tr>
<td>0.95</td>
<td>Strongly positive correlation</td>
</tr>
<tr>
<td>0.50</td>
<td>Moderate positive correlation</td>
</tr>
<tr>
<td>0.10</td>
<td>Weak positive correlation</td>
</tr>
<tr>
<td>0.00</td>
<td>No correlation</td>
</tr>
<tr>
<td>-0.10</td>
<td>Weak negative correlation</td>
</tr>
<tr>
<td>-0.50</td>
<td>Moderate negative correlation</td>
</tr>
<tr>
<td>-0.95</td>
<td>Strongly negative correlation</td>
</tr>
<tr>
<td>-1.00</td>
<td>High negative correlation</td>
</tr>
</tbody>
</table>
For every hypothesis in this section, the correlation testing was conducted and resulted in a 2-tailed value.

The null hypothesis will be rejected when Sig. or p-value is less than \( \alpha \), 0.05 significance level.

**Hypothesis 4 : There is relationship between students' cognition and Intention to study via e-Learning.**

Ho4: There is no relationship between students' cognition and Intention to study via e-Learning.

Ha4: There is a relationship between students' cognition and Intention to study via e-Learning.

**Table 5.2.3: Correlation Test Two Variables between Students' cognition and Intention to study e-Learning**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Intention to Study via E-learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Pearson Correlation</td>
<td>.331</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

According to the results shown on table 5.2.3, the p-value is 0.000. Thus, the null hypothesis is rejected at 0.05 level of significance. It implies that there is a
relationship between students' cognition and Intention to study via e-Learning. The correlation coefficient is 0.331 meaning that there is a moderate positive correlation between students' cognition and intention to study via e-Learning. Hence, as the level of cognition increases, the level of intention to study via e-Learning tends to increase in the same direction.

Hypothesis 5: There is a relationship between students' affect and Intention to study via e-Learning.

H05: There is no relationship between students' affect and Intention to study via e-Learning.

Ha5: There is a relationship between students' affect and Intention to study via e-Learning.

Table 5.2.4: Correlation Test Two Variables between Students' affect and Intention to study e-Learning

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Intention to Study via E-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective Pearson Correlation</td>
<td>.259</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

81
Since the p-value is 0.000, the null hypothesis is rejected at 0.05 level of significance. It implies that there is a relationship between students' affect and Intention to study via e-Learning. And the correlation coefficient is 0.259 meaning that there was nearly moderate positive correlation between students' affect and intention to study via e-Learning. As the level of the affective component increases, the level of intention to study via e-Learning tends to increase accordingly.

**Hypothesis 6: There is relationship between students' conation and Intention to study e-Learning.**

Ho6: There is no relationship between students' conation and Intention to study via e-Learning.

Ha6: There is a relationship between students' conation and Intention to study via e-Learning.

**Table 5.2.5: Correlation Test Two Variables between Students’ conation and Intention to study e-Learning**

<table>
<thead>
<tr>
<th></th>
<th>Intention to Study via E-learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conative</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>.462</td>
<td>.000</td>
</tr>
</tbody>
</table>
From the table, the p-value is 0.000, the null hypothesis is rejected at 0.05 level of significance. It can be concluded that there is a relationship between students' conation and Intention to study via e-Learning. And the correlation coefficient is 0.462 meaning that there is a nearly moderate positive correlation between students' conation and intention to study via e-Learning. As the level of conation increases, the level of intention to study via e-Learning tends to increase accordingly.

Group C: Relationship between Perception and Intention to study via e-Learning

Hypothesis 7: There is a relationship between students' perception and Intention to study via e-Learning.

Ho7: There is no relationship between students' perception and Intention to study via e-Learning.

Ha7: There is a relationship between students' perception and Intention to study via e-Learning.
Table 5.2.6: Correlation Test Two Variables between Students’ perception and Intention to study e-Learning

<table>
<thead>
<tr>
<th>Perception toward E-learning</th>
<th>Intention to Study via E-learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>.390</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
</tbody>
</table>

From the table, the p-value is 0.000, the null hypothesis is rejected at 0.05 level of significance. It can be concluded that there is a relationship between students’ perception and Intention to study via e-Learning. And the correlation coefficient is 0.390 meaning that there is a moderate positive correlation between students’ perception and intention to study via e-Learning. As the level of perception increases, the level of intention to study via e-Learning tends to increase accordingly.

5.3 Respondents’ Attitude Toward e-Learning

In this part, the descriptive statistics was used to describe respondents’ attitude toward relevant factors. And the Arbitrary Level was used in stating the rating of respondents’ attitude which is as shown as follows:
### Arbitrary Level

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.20 – 5.00</td>
<td>Strongly Agree (SA)</td>
</tr>
<tr>
<td>3.40 – 4.19</td>
<td>Agree (A)</td>
</tr>
<tr>
<td>2.60 – 3.39</td>
<td>Neutral / Undecided (UND)</td>
</tr>
<tr>
<td>1.80 – 2.59</td>
<td>Disagree (D)</td>
</tr>
<tr>
<td>1.00 – 1.79</td>
<td>Strongly Disagree (DA)</td>
</tr>
</tbody>
</table>

### 1) Cognitive Component of Attitude

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>Mean</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think a student gets more knowledge via e-Learning</td>
<td>0.786</td>
<td>3.838</td>
<td>A</td>
</tr>
<tr>
<td>2. I think that students using e-Learning take more responsibility for their own learning</td>
<td>0.640</td>
<td>4.063</td>
<td>A</td>
</tr>
<tr>
<td>3. I think that e-Learning reduces travel time and travel costs for students.</td>
<td>0.579</td>
<td>4.058</td>
<td>A</td>
</tr>
<tr>
<td>4. I think the university should use e-Learning as a part of every subject because e-Learning is a modern tool for self-study</td>
<td>0.667</td>
<td>3.943</td>
<td>A</td>
</tr>
<tr>
<td>5. I think both students and teachers using e-Learning can benefit greatly from the access to worldwide knowledge bases.</td>
<td>0.710</td>
<td>3.820</td>
<td>A</td>
</tr>
<tr>
<td><strong>Overall Cognitive Component</strong></td>
<td>0.461</td>
<td>4.018</td>
<td>A</td>
</tr>
</tbody>
</table>
Overall, the items in the cognitive component was rated at “agreed level” with the average mean of 4.018 and standard deviation of 0.461. This implied that the respondents did agree that e-Learning provided many benefits. And the respondents agreed that they have to take more responsibility in learning by themselves if they use e-Learning, with the mean of this item rated at the highest level, 4.063. From the above table, it could be concluded that respondents have positive cognition in using e-Learning in terms of getting more knowledge, reducing travel time and cost, and being a modern tool for self-study.

2) Affective Component of Attitude

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>Mean</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. I feel a student could acquire easier understanding of the lessons via e-Learning tools.</td>
<td>0.689</td>
<td>4.253</td>
<td>SA</td>
</tr>
<tr>
<td>7. I feel that e-Learning is an attractive tool.</td>
<td>0.764</td>
<td>3.750</td>
<td>A</td>
</tr>
<tr>
<td>8. I would feel higher satisfaction with my performance if the teacher used e-Learning tools.</td>
<td>0.733</td>
<td>3.953</td>
<td>A</td>
</tr>
<tr>
<td>9. I feel e-Learning offer convenience for students, in that they can access information at any time, any place.</td>
<td>0.655</td>
<td>3.915</td>
<td>A</td>
</tr>
<tr>
<td>10. I feel the skill of technology and information literacy is more developed when learn e-Learning.</td>
<td>0.669</td>
<td>4.155</td>
<td>A</td>
</tr>
<tr>
<td>Overall Affective Component</td>
<td>0.541</td>
<td>4.013</td>
<td>A</td>
</tr>
</tbody>
</table>
Overall, the attitude of respondents toward affective was rated at the “agreed level” with the average mean of 4.013 and standard deviation of 0.541. This implied that the respondents did agree with the items under the affective component of e-Learning. There was only one factor the respondents rated at “strongly agreed level” with the means of 4.253 that was “acquiring easier understanding of the lessons via e-Learning tools”. While “e-Learning is an attractive tool” item had the lowest mean equal to 3.750, standard deviation was 0.764, nevertheless, it was still rated in the agreed level. In addition, most of respondents agreed that they would be satisfied with the teacher who used e-Learning tools, which could improve their performance, skill of technology and information, and also offered them more convenience.

3) Conation Component of Attitude

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>Mean</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. I will ask others about the benefits of e-Learning.</td>
<td>0.575</td>
<td>4.288</td>
<td>SA</td>
</tr>
<tr>
<td>12. I will find further information on subjects offered via e-Learning.</td>
<td>0.599</td>
<td>4.013</td>
<td>A</td>
</tr>
<tr>
<td>13. I will take only selective courses that are offered via e-Learning</td>
<td>0.567</td>
<td>3.733</td>
<td>A</td>
</tr>
<tr>
<td>14. I will search for information on the Internet on e-Learning courses</td>
<td>0.617</td>
<td>3.765</td>
<td>A</td>
</tr>
</tbody>
</table>
15. I will talk with those who are knowledgeable about e-Learning.

| Overall Conation Component | 0.566 | 3.925 | A |

Overall, the conation component of attitude was rated at “agreed level” with the average mean of 3.925 and standard deviation of 0.566. This implied that the respondents did agree with the conative items under e-Learning. There was only one factor in which the respondents rated their attitudes at “strongly agreed level” with the means of 4.288 with standard deviation of 0.575 that was “recommendation of benefits of e-Learning to others”. While, “intention to take selective course offered via e-Learning” theme had the lowest mean equaled to 3.733, standard deviation was 0.567. Moreover, the respondents also agreed on finding further information on subjects, searching information via internet, and talking to persons who knows about e-Learning.

4) Perception and Intention to study via e-Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>Mean</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. E-Learning enables me to accomplish study tasks more quickly</td>
<td>0.808</td>
<td>3.248</td>
<td>UND</td>
</tr>
<tr>
<td>2. Using e-Learning can improve my grade.</td>
<td>0.923</td>
<td>3.120</td>
<td>UND</td>
</tr>
<tr>
<td>3. E-Learning can improve my learning productivity</td>
<td>0.935</td>
<td>3.308</td>
<td>UND</td>
</tr>
</tbody>
</table>
4. E-Learning can enhance the effectiveness of my study activities 1.019 2.923 UND

5. E-Learning can give me better control over my studies. 0.972 2.973 UND

**Overall Perception toward e-Learning** 0.527 3.114 UND

Overall, the respondents could not decide whether e-Learning could improve or contribute to their education or not, because the rating of overall perception toward e-Learning was equal to 3.114 and standard deviation was 0.527, which falls in the "undecided level". Moreover, all items under the perception theme were also rated at "undecided level", with mean values varying from 2.923 to 3.308. Thus, it can be implied that the respondents were not sure if e-Learning could make them obtain accomplishment on studying, better grades, and higher effectiveness. The item "E-Learning can enhance the effectiveness of my study activities" was rated at the lowest level, which mean and standard deviation equaled to 2.923 and 0.972, respectively.

### 5) Intention to Study via e-Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>Mean</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I intend to pursue programs via e-Learning because it can help me to study at anytime.</td>
<td>0.770</td>
<td>3.595</td>
<td>A</td>
</tr>
</tbody>
</table>
2. I intend to register for e-Learning courses after I have gathered all the information I can on them. | 0.938 | 3.608 | A

3. I intend to attend orientations on e-Learning before I register for further education via e-Learning. | 0.857 | 3.613 | A

4. I intend to recommend e-Learning to all my friends | 0.905 | 3.448 | A

5. I intend to study via e-Learning in Thailand rather than go abroad for higher education | 0.800 | 3.665 | A

6. I intend to study all courses (both core and electives) for a higher degree via e-Learning | 0.919 | 3.123 | UND

7. I am willing to invest in all the equipment I need for e-Learning | 0.951 | 3.333 | UND

| Overall Intention to Study via e-Learning | 0.816 | 3.473 | A |

The respondents’ overall intention to study via e-Learning were within the “agreed range” with an average mean of 3.473 and standard deviation of 0.816, meaning that the respondents were positive about their intention to studying via e-Learning.

In contrast, there were 2 items that were rated at the “undecided range”, because the respondents were not sure whether they would intend to study the entire program via e-learning and willing to invest in all equipment for e-Learning. The means of these two items were also rated at lowest level, means equaled to 3.123 and 3.333, respectively.
For the remaining items, they were rated at the same level, "agreed level", with means varying from 3.448 to 3.665. The intention to attend all orientations in order to get more information on e-Learning before registration was rated at the highest mean, equal to 4.07.
Chapter VI

Summary, Conclusions and Recommendations

This chapter summarizes and concludes the results and findings. It consists of three sections. The first section is the interpretation of the results or summary of findings. The second section is the conclusion. The last section contains recommendations and suggestions for further research.

6.1 Summary of findings

This section presents the interpretations of the results that were based on the data gathered, which include a summary of respondents' characteristics and a summary of hypotheses testing.

6.1.1 Summary of respondents' characteristics

Based on the data of 400 respondents collected from the survey research, there are 69.5% of female respondents and 30.5% of male respondents. This conforms with the population enrolled in the two selected faculties, School of Management and Science and Technology, wherein female students number 64% and 71%, respectively.

The highest percentage of age group of the respondents is 21 years old which account for 44.8% of the total respondents. Regarding the grade average point of the respondents, the findings show that the largest group of the respondents 86.5%
have grade average point of 2.01 – 3.00. Once again, this conforms with the data received from the Office of the Registrar, Assumption University wherein the average GPA of fourth year students in the School of Management is 2.41 and Science and Technology, 2.55, respectively.

6.1.2 Summary of hypotheses testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Test Statistics</th>
<th>Level of Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho1: There is no difference between gender and Intention to study via e-Learning.</td>
<td>Independent samples test</td>
<td>.121</td>
<td>Fail to reject Ho</td>
</tr>
<tr>
<td>Ho2: There is no difference between grade average point and Intention to study via e-Learning.</td>
<td>Independent samples test</td>
<td>.245</td>
<td>Fail to reject Ho</td>
</tr>
<tr>
<td>Ho3: There is no difference between age and Intention to study via e-Learning.</td>
<td>One-Way ANOVA</td>
<td>.154</td>
<td>Fail to reject Ho</td>
</tr>
<tr>
<td>Ho4: There is no relationship between students’ cognition and Intention to study e-Learning.</td>
<td>Pearson product moment coefficient of correlation</td>
<td>.000</td>
<td>Reject Ho</td>
</tr>
<tr>
<td>Ho5: There is no relationship between</td>
<td>Pearson product moment</td>
<td>.000</td>
<td>Reject Ho</td>
</tr>
<tr>
<td></td>
<td>Coefficient of Correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Ho6: There is no relationship between students' affective and Intention to study e-Learning.</td>
<td>Pearson product moment coefficient of correlation</td>
<td>.000</td>
<td>Reject Ho</td>
</tr>
<tr>
<td>Ho7: There is no relationship between students' perception and Intention to study e-Learning.</td>
<td>Pearson product moment coefficient of correlation</td>
<td>.000</td>
<td>Reject Ho</td>
</tr>
</tbody>
</table>

### 6.2 Conclusion

As per the hypotheses test results, it can be seen that there are no significant differences in demographic variables and intention to study via e-Learning. All three null hypotheses based on age, gender, and GPA have failed to reject. This conforms with the study by Riding (2000) who maintained that in terms of gender, differences tend to be small and non-significant for student attitude toward e-Learning.

Graff, Davis, and McNorton (2003) who studied the relationship between attitudinal components and intention to opt for e-Learning among Chinese and British students found that while there was no main effect of age on the overall attitude scores, there was a significant effect on the affective and cognitive components ($F_{2,14} = 3.62$ and $3.75$, respectively, $p < 0.05$). Tukey post hoc tests revealed that scores for participants aged 17-19yrs significantly varied from scores.
for participants aged 21-32yrs. An analysis of the means reveals that the lowest age band had significantly lower scores on the affective and cognitive attitude subscales than the highest age band (mean affective 34.54 and 38.00, mean cognitive 23.78 and 26.92, respectively). Therefore, the 17-19 yr. age group had significantly more positive affective and cognitive attitudes towards computers. The findings of this study were not in accordance with those of Graff et al. (2003) because no differences were found between the four age groups of Assumption University students and their intention to study via e-Learning.

Nevertheless, the findings of this study showed that all three attitude components as well as perception were significantly related to students’ Intention to study via e-Learning. The correlation coefficient for cognition was 0.331, affect was 0.259, conation was 0.462 and perception was 0.390.

Further analysis using descriptive statistics showed that of all three attitudinal components, the highest overall score was seen in the cognitive component (mean 4.018), followed by the affective component (mean 4.013) and conative component (mean 3.925). It was interesting to note that while perception obtained the lowest score of all variables (mean 3.114), students’ intention to study still fell in the agree level (mean 3.473).

The overall picture that emerges from the findings is that students in the two specified faculties of Assumption University, while having an overall positive attitude toward studying via e-Learning, also had some serious doubts about the benefits that e-Learning could offer them. Results of this study echo earlier studies
by Kleiman (2000), Minton (2000), and Teather (2000). These findings could have been illustrated more clearly had the current study been a comparative study of traditional classroom teaching versus online teaching, similar to what O’Malley and McCraw (2003) did. The authors found in their study that fourth year students at a business college perceived that Online teaching had a significant relative advantage to traditional methodologies. These advantages include saving them time, fitting in better with their schedules, and enabling students to take more courses. The students did not believe that they learned more in online courses and they had concerns related to being able to contribute to class discussions.

Despite these positive findings, some reservations toward e-Learning were nonetheless revealed in the present study. All five factors related to student perception of e-Learning in the present study fell in the “Undecided” level. The lowest mean scores were seen in the statements: “e-Learning can enhance the effectiveness of my study activities” (mean 2.923), and “e-Learning can give me better control over my studies” (mean 2.973). The results conform with a study conducted by Keller and Cemerud (2002) in two Swedish schools. In their sample of 150 students, more than two thirds of the students disagreed totally or to a large extent that the e-Learning had facilitated their studies, improved the communication with other students and teachers, improved the pedagogic value of the courses or improved their possibilities to solve problems related to the courses.
6.3 Recommendations

If Assumption University is to successfully introduce higher degree courses via e-Learning in the following year, it remains important to discuss all the issues and implications related to implementing e-Learning. The departments charged with designing the e-Learning program must take account this study’s findings on student attitudes and perceptions, and determine how to use the technology to the University’s (and Thailand’s) overall competitive advantage. It is also important to answer the questions: What kind of e-Learning must be adopted and in what context? How is it going to be implemented? How do we measure student success in e-Learning?

Knowing exactly how faculty, staff, and students perceive e-Learning is an important first step. One limitation of the current study is that it has focused only on the students’ perspective. While technology itself is inhuman, how people use technology remains very human. The way in which education is offered via e-Learning clearly influences students’ comprehension of study materials, as well as faculty members’ use of electronic teaching materials. Faculty members, by benefit of experience and training, know that e-Learning can take place, but that it will require different or modified teaching methods and strategies to make it happen effectively. Some e-Learning applications can enhance student learning, whereas in other instances, it might not yield such impressive results. Simply put, Assumption University must consider whether using e-Learning for all courses might be a wise investment, as compared to similar courses offered in traditional face-to-face
classroom settings. In this light, the University needs to consider the findings on two items in the study which students rated in the “undecided” level which are: “I intend to study all courses (both core and electives) for a higher degree via e-Learning” (mean 3.123) and “I am willing to invest in all the equipment I need for e-Learning” (mean 3.333).

In examining the relationship of independent variables, attitude and perception with Intention to study via e-Learning, it was found that all three of the attitudinal components were positively related to intention. Choi et al. (2002) discovered that perceived usefulness, trialability, and result demonstrability were significant influencing factors on intention to adopt e-Learning. The findings of this study suggest that attitude of potential users of e-Learning was positively related to perceived usefulness of the programs, reducing travel time and access to a worldwide database.

This implies that it is very important that Assumption University show such accrued benefits of e-Learning to students. It means that e-Learning program instructors or providers should focus on these factors that affect students’ attitudes and perception and will influence them to enroll with future e-Learning programs.

Further, the findings of this study also indicate that e-Learning can be a powerful tool in education. This tool has the potential both to support effective education programs and to expose student to the implications of information systems. It is evident that the instructors or providers need to upgrade their technical skills and
knowledge in order to keep in touch with the technological developments that are required for successful e-Learning programs.

6.4 Further Research

While these findings are encouraging and support Assumption University's adoption of e-Learning, further research is necessary to obtain success and to attenuate weaknesses.

Further studies of e-Learning in Higher Education should include the faculty and staff perspective. This is important if e-Learning is to be both economically viable as well as offer a competitive advantage.

The literature shows that the implementation strategy of an e-Learning system plays a more important role in influencing the students' perceptions than individual background. Thus, this factor should be further reviewed.

In previous studies done in western countries, students who identified themselves as innovators or early adapters had perceptions which were positively related to attitudes to new technology. Further studies on the relationship between student innovativeness and intention to study via e-Learning needs to be conducted in Thai universities.

Further studies between students' perceptions of e-Learning and their learning style are necessary. In addition, some experimental or observational measurement might also provide deeper insights.
Finally, studies of e-Learning in Higher Education should identify further factors which influence students’ attitude and perceptions, eg. motivation and career planning.
References


Carry, D., and Willis, J. (2001). Technology and Teacher Education. Association of Advancement of Computing in Education. USA


College of Internet Learning (2005). Assumption University, College of Internet Distance Education (www.elearning.au.edu), CI DE.


The Thai Ninth Education Act. BE 2542. Office of the National Education Commission, Office of the Prime Minister, Kingdom of Thailand.


Appendix A

Questionnaire: English Version
**Questionnaire**

This questionnaire is aimed at studying the student’s attitude (Cognitive, Affective and Conation) and Perception toward e-Learning Program. This research is a partial fulfillment of the requirement for a Master Degree of Business Administration, Graduate School of Business, Assumption University.

**Part 1 : Attitude toward e-Learning**

**Instruction**: Please mark X one answer in ........ which is the most applicable to your case as below:

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. I think a student gets more knowledge via e-Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I think that students using e-Learning take more responsibility for their own learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I think that e-Learning reduces travel time and travel costs for students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I think the university should use e-Learning as a part of every subject because E-learning is a modern tool for self-study.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I think both students and teachers using e-Learning can benefit greatly from the access to worldwide knowledge bases.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Affective</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I feel a student could acquire easier understanding of the lessons via e-Learning tools.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I feel that e-Learning is an attractive tool.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I would feel higher satisfaction with my performance if the teacher used e-Learning tools.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I feel e-Learning offers convenience for students, in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
that they can access information at any time, any place.

10. I feel the skill of technology and information literacy is more developed when learn e-Learning.

11. I will ask others about the benefits of e-Learning.

12. I will find further information on subjects offered via e-Learning.

13. I intend to take only selected courses that are offered via e-Learning.

14. I will search for information on the Internet on e-Learning courses.

15. I will talk with those who are knowledgeable about e-Learning.

<table>
<thead>
<tr>
<th>Part 2 : Perception toward e-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction : Please mark X one answer in which is the most applicable to your case as below:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perception toward e-Learning</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. E-Learning enables me to accomplish study tasks more quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Using e-Learning can improve my grade.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. E-Learning can improve my learning productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. E-Learning can enhance the effectiveness of my study activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. E-Learning can give me better control over my studies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part 3: Intention to Study via e-Learning

Instruction: Please mark X one answer in ....... which is the most applicable to your case as below:

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I intend to pursue programs via e-Learning because it can help me to study at anytime.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I intend to register for e-Learning courses after I have gathered all the information I can on them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I intend to attend orientations on e-Learning before I register for further education via e-Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I intend to recommend e-Learning to all my friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I intend to study via e-Learning in Thailand rather than go abroad for higher education.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I intend to study all courses (both core and electives) for a higher degree via e-Learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I am willing to invest in all the equipment I need for e-Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part 4 : Demographic Information

Instruction : Please mark X or fill in ........ which is the most applicable to your case as below:

1. Age..................years

2. Gender

        .......1. Male
        .......2. Female

3. Grade point average

        .......1. 1.00 – 2.00
        .......2. 2.01 – 3.00
        .......3. 3.01 – 4.00
Appendix B

Questionnaire: Thai Version
แบบสอบถาม

แบบสอบถามนี้จัดทำขึ้นเพื่อเป็นส่วนประกอบในการทำวิทยานิพนธ์เพื่อการศึกษาเรื่องความสัมพันธ์ของ
หัวข้อและวิธีการวิจัยที่เกี่ยวข้องกับการศึกษาแนวทาง e-Learning โดยนักศึกษาปริญญาโทมหาวิทยาลัยสมบัติภูมิ
ขอให้ได้เข้ามาเป็นผู้วิจัยในกำลังศึกษาเท่านั้น ผู้วิจัยขอขอบคุณผู้ตอบแบบสอบถามทุกท่านที่ให้ความร่วมมือ

ตอบที่ 1 หัวข้อเรื่อง e-Learning

<table>
<thead>
<tr>
<th>ตัวชี้วัด</th>
<th>ปฏิทินของบทที่ X ลงในตัวตอบที่เหมาะสมเพื่อตัวตอบเดียวในแต่ละข้อต่อไปนี้</th>
</tr>
</thead>
<tbody>
<tr>
<td>ความคิดเห็น</td>
<td></td>
</tr>
<tr>
<td>2. นักศึกษาที่ใช้ e-Learning จะมีความรับผิดชอบในการเรียนมากขึ้น</td>
<td>..........</td>
</tr>
<tr>
<td>5. อัปjected e-Learning สามารถให้การประยุกต์และความรู้ที่หลากหลายขึ้น</td>
<td>..........</td>
</tr>
<tr>
<td>ความรู้สึก</td>
<td></td>
</tr>
</tbody>
</table>

ผลผลิต

11. e-Learning ทำให้เกิดมุ่งมั่นที่จะมีประสบการณ์ e-Learning. 

12. e-Learning ทำให้เกิดมุ่งมั่นที่จะศึกษาเกี่ยวกับการเรียนโดยใช้ e-Learning.


| 13. ด้วยความที่จะลงทะเบียนเรียนใน e-Learning | เหนื่องดราม อย่างยิ่ง | เหนื่องดราม | ไม่แนะนำ | ไม่เน้นดราม | ไม่เน้นดราม อย่างยิ่ง |
| 14. ด้วยความที่จะลงทะเบียนเรียนใน e-Learning | | | | | |
| 15. ด้วยความที่จะลงทะเบียนเรียนใน e-Learning | | | | | |


d. ตัวถี่ 2 การรับรู้ถึงประโยชน์ของการเรียนผ่าน e-Learning
c. คำชี้แจง : โปรดทำเครื่องหมาย X ลงในคอลัมน์ที่เหมาะสมเพียงคอลัมน์เดียวในแต่ละข้อต่อไปนี้

d. การเรียนผู้ด้านประโยชน์ของการเรียนผ่าน e-Learning ที่ให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน
1. e-Learning ช่วยให้มันสามารถทำงานด้วยเสรีเขียน
2. การใช้ e-Learning ทำให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน
3. e-Learning ช่วยให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน
4. e-Learning ช่วยให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน
5. e-Learning ทำให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน


d. ตัวถี่ 3 ความต้องใจในการเรียนผ่าน e-Learning
c. คำชี้แจง : โปรดทำเครื่องหมาย X ลงในคอลัมน์ที่เหมาะสมเพียงคอลัมน์เดียวในแต่ละข้อต่อไปนี้

d. ความต้องใจในการเรียนผ่าน e-Learning ที่ให้ผู้เรียนสามารถทำงานด้วยเสรีเขียน
1. ด้วยความที่จะเรียนในรายวิชาที่เรียนผ่าน e-Learning เพราะฉะนั้นจะไม่เสียเวลาอีก
2. ด้วยความที่จะเรียนในรายวิชาที่เรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
3. ด้วยความที่จะเรียนในรายวิชาที่เรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
4. ด้วยความที่จะเรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
5. ด้วยความที่จะเรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
6. ด้วยความที่จะเรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
7. ด้วยความที่จะเรียนผ่าน e-Learning เพราะจะได้รับทุนที่ดี
ตอนที่ 4 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

คำชี้แจง : โปรดทำเครื่องหมาย X หรือเติมข้อมูลลงในคำตอบที่เหมาะสมเพื่อแสดงคำตอบเทียบสอดคล้องกับข้อมูลของคุณ

1. อายุ.........................

2. เพศ

.......1. ชาย
.......2. หญิง

3. เกณฑ์เงินลงทุน

.......1. 1.00 – 2.00
.......2. 2.01 – 3.00
.......3. 3.01 – 4.00