FACTORS DETERMINING STUDENTS' INTENTION TO ADOPT E-LEARNING IN HIGHER EDUCATION

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FACTORS DETERMINING STUDENTS' INTENTION TO ADOPT E-LEARNING IN HIGHER EDUCATION

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ABSTRACT

The primary questions addressed in this research are the following: what are the factors determining students' intention to adopt e-learning in higher education and what are the relationships among these factors?

This research investigates and identifies factors affecting higher education students' intention to adopt e-learning in four universities that has already applied computer and internet to their management information system in West Sumatera. E-learning adoption is approached from the information systems acceptance point of view. This suggests that a prior condition for learning effectively using e-learning systems is that students should use them as the complement to their learning activities. In turn, this will help and guide those, especially the institution whose develop, implement, and deliver e-learning systems. In this study, an extended version of the Technology Acceptance Model (TAM) was developed to investigate the underlying factors determining intention to adopt e-learning in higher education students. Those factors are management support, perceived ease of use, and perceived usefulness. The TAM was populated using data gathered from a survey of 200 undergraduate college students, who were using the e-learning system at their universities. The model was estimated using Structural Equation Model (SEM). A path model was developed to analyze the relationships between the factors to explain higher education students' intention to adopt e-learning system.

Keywords – *e-learning, intention to adopt e-learning, management support, Technology Acceptance Model (TAM).*

Skripsi ini telah dipertahankan di depan sidang penguji dan dinyatakan lulus pada tanggal 10 Agustus 2011.
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PREFACE

Bismillahirrahmanirrahim...

Deeply praise for ALLAH, Lord of the world, the owners' of living things, Allah SWT, that always listened and answered my prays. Alhamdulillah through His guidance, finally, I finished this skripsi and also our prophet, Muhammad SAW the messenger that brings Islam proceeding as direction for the community.

This skripsi is proposed to fulfill partial requirement in achieving bachelor degree at Management Department, Faculty of Economics, Andalas University. The researcher chose to conduct a research about factors determining students' intention to adopt e-learning in higher education. And the researcher expects this research is preferable to be studied and demonstrated since there were a few preliminary researchers adapt this topic to academic.

The researcher understands this skripsi need to be improved due to its limitations for achieving perfection. The researcher therefore would gladly welcome suggestions and critics to improve its quality. The researcher hopes this skripsi will make valuable contribution to academicians, students and readers in general.

Padang, August 2011

Yulia Rahmawati

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Researcher,

YULIA RAHMAWATI

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CHAPTER I

INTRODUCTION

1.1. Background of the Research

The development of sciences and information technologies bring the rapid changing to the human's life aspects. Those create competition in every aspect of human life and the competition perceived as the main characteristic of globalization. Globalization forces each individual to increase their quality in order to adapt to the new era of life. The proper way to win the competition in the era of globalization is by increasing the quality of the people including higher education students through well programmed human resource development. Education believed can improves the quality of human resource since it provides the potential human resource with competitive competencies that comprise knowledge, skills, and attitudes needed for winning the competition.

In an educational process, learning strategy is one factor which influences the level of students' academic performance. By development of information technology and communication, the learning strategy that used by students in higher education also has some development. One of the recent technologies which applied in university is e-learning. E-learning is one of the learning strategies that can be used in higher education since most of students, lecturers, and even the university institution have familiar already with computer. The development of e-learning, as an alternative to traditional education, has generated different perceptions among the main players of university education - lecturers and students (Tutunea, et al 2009).

Many years ago, the paradigm in education was teacher-centered, where the teacher provided everything for the students in learning process, but today this system seems does not effective anymore. Nowadays, student-centered or learner centered seems more effective to be applied as one of the learning strategy. In this strategy students are pushed to be more active in learning process and the lecturers are just as the facilitator. (Ali, 2004). For example, college students can find the course materials from internet based on the syllabus that have been given by the lecturers. It can help the students to learn the specific subject before they enter the class. Therefore, when they entering the class they already have basic understanding concerning to the topic and they can ask and discuss what they do not understand to the lecturers. (Suyanto, 2005).

E-learning courses are becoming an increasingly important part of higher education institutions (Ngai et al., 2007). E-learning can be used as one of learning method in student-centered or learner centered. The used of E-learning can maximize and motivate the lecturers to improve the quality of learning process and the quality of course materials. The used of E-learning also can increase the independency of the students, and increase the communication intensity level of the students and the lecturers. E-learning also can be used as one of the solution to solve the distance problems and also time limitation in a learning process. Thus, E-learning can increase the effectiveness and efficiency in learning process (Suyanto, 2005).

The term e-learning comprises a lot more than online learning. As the letter "e" in e-learning stands for "electronic", e-learning would incorporate all educational activities that are carried out by individuals or groups working online

or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices (Naidu, 2006). Asynchronous e-learning happens when participants (lecturers and students) cannot be online at the same time. Meanwhile synchronous e-learning supported by online media, thus the participants have interaction in real time (Hrastinski, 2008).

The understanding of one's ability to accept technology in an online environment as an educational tool is thought to be a starting point of information technology used (Meli. 2008). Technology Acceptance Model (TAM) is capable to explain user behavior across a broad range of end-user computing technologies and user populations (Rigopoulos & Askounis, 2007). TAM will describe the reasons of why people should accept one new system. TAM, based on Davis theory on 1989, consists of two main elements which are perceived usefulness and perceived ease of use that will affect the individual's intention and usage of a new technology. Perceived usefulness (PU) is considered as the degree of a person in believing that using a particular system would enhance his job. Perceived ease of use (PEOU) is considered as a degree to which a person believes that using a particular system would be free from effort (Davis,1989).

Technology Acceptance Model (TAM) also incorporates a causal relationship between perceived ease of use (PEOU) and perceived usefulness (PU). TAM state that a system would be perceived to be more useful if it is easier to use (van der Heijden et al., 2001). People will consider that new system will help them enhance their job or they believe that system will make them free from effort, so it will affect the intention of people to use a system (Chatzoglou et al., 2010).

TAM suggests that PU and PEOU are determined by external variables relative to the use of a specific system (Al-Busaidi & Al-Shihi, 2010). Management support has been argued to influence system success. According to TAM, management support, being an external variable to the model, influences perceived usefulness and perceived ease of use (Chatzoglou et al., 2010). Management support refers to the perceived level of support offered by management to the e-learning usage. Management support can take a variety forms such as encouragement to the system, providing a user friendly system, offering educational program about the system, management also can provide information technology expert to support the adopted system (Igbaria et al., 1997).

In the original TAM, the variables of intention mediate the effect of perceived usefulness and ease of use on technology acceptance and actual usage of a system (Kim et al., 2007). Intention refers to an individual's subjective probability that he/she will perform some behavior, while an attitude represents an individual's general feeling of a favorableness or unfavorableness toward some stimulus object (Fishbein & Ajzen, 1975).

The current study intended to observe factors determining students' intention to adopt e-learning in higher education in West Sumatra through Technology Acceptance Model (TAM). This research will examine the TAM, which consists of management support, perceived ease of use (PEOU), perceived usefulness (PU) and its influence students' intention to adopt e-learning in higher education. The impact of intention to the actual usage of a technology will not included in this research because of there is still limited data of e-learning usage in higher education students at West Sumatra.

1.2. Research Problems

The research questions were designed with the specific purpose of generating new knowledge and understanding. The current study is intended to answer the research questions:

1. How does Technology Acceptance Model (TAM) which consists of management support, perceived ease of use, and perceived usefulness influences higher education students' intention to adopt e-learning?
2. How does the e-learning perceived ease of use will affect on e-learning perceived usefulness?

1.3. Objectives of the Research

With reference to the research problem, this study seeks to achieve the following objectives:

1. To analyze the determinants of students' intention to adopt e-learning in higher education.
2. To examine the influence of e-learning perceived ease of use to e-learning perceived usefulness.
3. To examine the influence of Technology Acceptance Model (TAM) to the intention of higher education students in adopting e-learning.

1.4. Significant of the Research

Significant of the research are:

- To get information about the students' intention to adopt e-learning in higher education.

- To know the relationship between Technology Acceptance Model (TAM) and the intention of higher education students in West Sumatra to adopt e-learning.
- To understand the ways to manage e-learning system in order to increase the intention to adopt e-learning in West Sumatra higher education students.

1.5. Contributions of the Research

The results of this research are expected to give the contributions as follow:

- The result of this study gives addition information to the parties at the higher education organization especially in West Sumatra related factors which determine the higher education students' intention to adopt e-learning.
- As an additional knowledge for the society or for education organization (university) especially for the one who has attention about e-learning adoption.
- As an additional information for the upper management level of higher education in West Sumatra to create the better quality of e-learning system and management system that support e-learning system.

1.6. Scopes of the Research

This research has a limited scope of analyses in terms of numbers of variables and object of the research. This research scope is about students' intention to adopt e-learning in higher education by using Technology Acceptance Model (TAM). The variables will be tested in this research are limited into several variables as predictors of intention to adopt e-learning in higher education, they

are management support, perceived usefulness (PU), and perceived ease of use (PEOU). This research will also examine the influences of perceived ease of use to perceived usefulness. Moreover the object of the research is 200 college students from four higher education institutions in West Sumatra to examine whether TAM which consists of management support, perceived usefulness, and perceived usefulness can affect the intention of higher education students to adopt e-learning.

CHAPTER II

REVIEW OF THE LITERATURE

2.1. Concepts of E-Learning

According to Selim (2007), the concept of e-learning systems emerged from the development of information technology. Recently e-learning systems have been used in teaching and learning in many universities that resulted in changes in education process in those institutions (Selim, 2007). The growth of Web applications has made e-learning systems as an important instructional medium in universities (Shih, 2008).

E-learning is commonly referred to the intentional use of networked information and communications technology in teaching and learning. A number of other terms are also used to describe this mode of teaching and learning. They include online learning, virtual learning, distributed learning, network and web-based learning. Basically, they all refer to educational processes that utilize information and communications technology to mediate asynchronous as well as synchronous learning and teaching activities (Naidu, 2006).

Asynchronous e-learning, facilitated by media such as e-mail and discussion boards, supports work relations among learners and with teachers, even when participants cannot be online at the same time. Meanwhile synchronous e-learning, supported by media such as video conferencing and chat, so the teachers and learners can asking and answering question in real time (Hrastinski, 2008).From the student point of view, e-learning is a form of education which implies involvement, motivation and efficiency in communication (Bertea, 2009).

Romiszowski, 2004 defines these various types or modalities of e-learning activity into four types of e-learning activities:

Individualized self-paced e-learning online refers to situations where an individual learner is accessing learning resources such as a database or course content online via an Intranet or the Internet. A typical example of this is a learner studying alone or conducting some research on the Internet or a local network.

Individualized self-paced e-learning offline refers to situations where an individual learner is using learning resources such as a database or a computer-assisted learning package offline (i.e., while not connected to an Intranet or the Internet). An example of this is a learner working alone off a hard drive, a CD or DVD.

Group-based e-learning synchronously refers to situations where groups of learners are working together in real time via an Intranet or the Internet. It may include text-based conferencing, and one or two-way audio and videoconferencing. Examples of this include learners engaged in a real-time chat or an audio-videoconference.

Group-based e-learning asynchronously refers to situations where groups of learners are working over an Intranet or the Internet where exchanges among participants occur with a time delay (i.e., not in real time). Typical examples of this kind of activity include on-line discussions via electronic mailing lists and text-based conferencing within learning managements systems.

For purposes of this research, e-learning in this research defines as learning facilitated and supported through the utilization of information and communication technologies (ICTs) (Jenkins & Hanson, 2003). It includes use of

ICT based tools (e.g. Internet, computer, telephone, e-mail, university portal, video, and others) and content created with technology (e.g. animations) to support learning activities (Gilbert & Jones, 2001; Suyanto, 2005).

2.1.1. E-learning as the Complement of Conventional Learning System

In its application, one of the implementation functions of e-learning is as the complement of conventional learning system (Siahaan, 2001). E-learning is applied in education in three ways; as a supplement, as a complement, and as a substitute (Ali, 2004). When teaching-learning process is undertaken in regular classroom and students is free to decide whether or not they would take e-learning program this means that the function of e-learning is as a supplement for teaching. E-learning categorized as a complement when teaching-learning process is undertaken in regular classroom and every student is mandated to take e-learning program. Moreover, e-learning applied as substitute when the teacher undertakes the teaching-learning process through internet instead of the regular one in a classroom which is usually applied in open universities (Ali, 2004).

The best implementation of e-learning in a regular higher education is as complement of the conventional learning system because students still need some explanation from the lecturers about the subjects taken (Muzid & Munir, 2005). As complement of the conventional learning system, e-learning programmed to complete and enrich the course material accepted by the students in the class (Lewis, 2002). The students mandated to complete the conventional class meeting, assignment, and assessment by download or search the additional materials through internet. Students also can watch some video, reading e-book, or send e-mail, and have some discussion in a mailing list.

Moreover, when the students have some difficulties in understanding the course material which has been given in the class, the students has a chance to access the e-learning course material or vice versa. The goal of this system (e-learning as the complement of conventional learning) is to help the students to enrich their knowledge and to help the students to understand the course material better than if they just trying to learn from the course material which has been given by the lecturer in the class.

2.1.2. E-Learning Advantages and Disadvantages

From the experiences and information in the literature (Ali, 2004; Soekartawi, 2002; Mulvihil, 1997), there are so many advantages gets from e-learning implementation, among others:

- Makes the interaction between students and lecturer becomes easier and increase the time of interaction between students and the lecturer, even between college students itself. In a conventional learning process sometime students unable to ask question in the classroom due to limited opportunity or others personal reason. Through e-learning the learning process carried out through an electronic media in such a way the students have more time and opportunity, and feel free to ask question or to conduct discussion.
- Make it possible for the students and lecturer to share the information about course material in order to optimize the limited time available at the class.
- Increase the quality and the performance of the lecturers by a better learning development models and course materials which are easier to understand by the students.

- Decrease the differences or distance between lecturers and students.
- Easier to update the content. The content learning in the application of e-learning is designed for being uploaded in a website which makes the web designer or the lecturer to update the web content periodically or whenever needed. This also gives the students updated content of learning.
- Changing of students learning system, from the conventional system, where the students are passive in the learning process to the active students in the learning process.

Even though there are many advantages of e-learning implementation, this system also has some disadvantages. Some critics (Bullen, 2001), toward e-learning are as follow:

- Less interaction between lecturer and students or between students itself. This less of interaction could slow the value creation in learning process.
- Lack of system builds for the e-learning. Such as low internet connection.
- Change of lecturers' role which master the conventional learning technical, but now must know the learning technical using information, communication, and technology (ICT).
- Students with no high learning motivation tend to be failed in their study.
- Internet facilities do not available in every place.

Nevertheless, from some of disadvantages of e-learning implementation, those disadvantages could be minimized by functioned the e-learning as the complementary of learning process not as the substitute of the learning system in the class.

2.1.3. Information, Communication, and Technology (ICT) and Learning Systems

Information technology affects every corner of college, from instruction to students' services and from business processes to staff development. The Availability of personal computers (PCs) in the 1980s and the Internet resources in the 1990s has brought tremendous transformation on how students learn in traditional learning environment. Information technology (IT) tools are being increasingly used in educational institutions to facilitate students learning. While the use of computers prepares future college graduates with the essential skills needed for employment (Khan, 2009).

Also stated by Khan, (2009), Researchers have been divided their opinions on whether IT affects positively to the students learning. It is easy to understand the reasons for these differences in conclusions. Since students started using personal computers and the internet over the years, the use of IT tools became more widespread and students started becoming more comfortable using such technologies. Additionally, instructors began to incorporate computers in their courses and require students to use computers in completing their assignments.

In the application of ICT internet plays an important role. Internet is a large collection of computers in networks that are tied together that many users can share their vast resources (William, 1999). Internet is a set of computers that are connected each other that make them possible to send and receive messages in the form of text, graphics and sound worldwide (Ali, 2004).

Leach (2005), studied the increasing use of information technology in students' learning experiences, on campus and on-line, including e-mail, web

pages, chat rooms, presentation software, wireless networks, computer simulations, virtual reality, laptops in classrooms, hybrid classes and e-books. He concluded that such usage of technologies will increase over time.

According to Lemke and Coughlin (1998), while further research studies are needed, emerging trends indicate that, under the right conditions, technology:

- Accelerates, enriches, and deepens basic skills.
- Motivates and engages students in learning.
- Helps relate academics to the practices of today's workforce.
- Increases economic viability of tomorrow's workers.
- Strengthens teaching.
- Contributes to change in schools.
- Connects schools to the world.

Schacter (1995), concluded that technology initiatives have to focus on teaching and learning, not the technology, to be successful: one of the difficulties about technology and education is that a lot of people think about the technology first and the education later. Educators are starting to recognize that it is more important to use technology for learning than it is to learn how to use the technology. In short, technology has the potential advantage to improve teaching and learning process which relies on teachers and learners' purposes in using the technology, under which contexts they use it, and in which ways it is used.

2.2. Adoption of Technology in Learning Process

Adoption is a mental process which an individual passes from hearing about an innovation to its adoption that follows awareness, interest, evaluation, trial, and adoption stages (Rogers, 1962; cited from Karki & Bauer, 2004). The rapid

technological developments have increased society's dependence including higher education students on information technology. At least higher education students should know how to use computer and internet in their daily activity. Whether they use computer and internet to do their assignment or in the learning process, whether they use computer and internet to do some college activities such as college registration, or whether just to get additional information from the internet to complete their knowledge about some subjects they are interesting about.

Some of the prior studied were confirmed on the application of Technology Acceptance Model (TAM) within the context of learning process. Brown, (2002) surveyed 78 first year South African University students with little prior experience of internet technology in the context of TAM and found that individual characteristics of self-efficacy and computer anxiety significantly influenced perceived ease of use (PEOU) as did the website characteristics, ease of finding and ease of understanding and also confirmed that in developing country context perceived usefulness (PU) components might not predict the adoption and find the role of PEOU as the main predictor of PU.

Similarly, Watcharawaleem, et al. (2005), conduct the study in Thailand toward e-learning attitudes of the students based upon the methodology of TAM. In Egypt Abdul-Wahab (2008), applied a questionnaire with 24 items that measured the attitudes towards e-learning, the intention of adopting e-learning, the availability of resources, the ease of use, and the utility in a Lickert scale.

Masrom (2007), studied TAM and e-learning among Malaysian students and found that both PEOU and PU have relationship towards e-learning adoption. Roca et al. (2006), studied 172 respondents in relation to understand e-learning

continuance intention with the modified TAM and found that e-learning intention is determined by satisfaction that in turn is jointly determined by PU, PEOU, system quality, service quality and information quality. More specifically Muzid & Munir (2005), studied 132 respondents about the readiness of students, management institution to adopt e-learning.

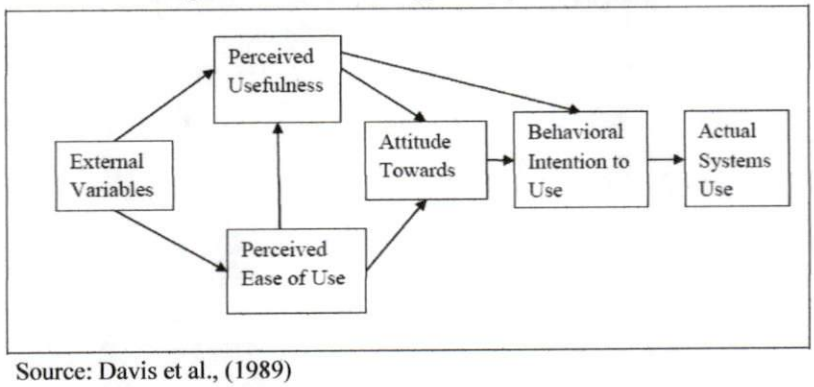
2.2.1. Technology Acceptance Model (TAM) in Adoption of Technology

Technology adoption research has developed in recent years (Chatzoglou et al, 2010). This study is inspired by the technology acceptance model (TAM) introduced by Davis (1985), that is widely used in the field of information systems. TAM has received considerable attention in the information system field by predicting and explaining IT usage intention and behavior (Yu et al., 2005). The TAM proposes that perceived usefulness and perceived ease of use of a new technology determine the acceptance and usage of a technology (Chatzoglou, 2010).

TAM suggest that while a user presented with new technology, some factors influence them in making decision about how and when they use it. TAM is a theory map the model how the user process to accept and use technology. This is an adaptation of the theory of Reason Action (TRA) proposed a model of human behavior in the field of information system by Ajzen and Fishbein (1980; cited from Bagozzi et al., 1992). TAM replaces many of TRA's attitude measures with the two technology acceptance measure that is ease of use and usefulness. (Davis, 1989). TRA and TAM, both of which have strong behavioral elements, assume that when someone forms an intention to act, that they will be free to act

without limitation. People will consider that new system will help them to enhance their job or they believe that system will make them free from effort. These reasons will influence people to accept or implement new system (Bagozzi et al, 1992).

Figure 2.1. Technology Acceptance Model



Source: Davis et al., (1989)

The TAM proposed by Davis et al., (1989), is shown in figure 1. The model represents the causal relationship that shows by the arrows. According to the model, a potential user's overall attitude toward using a given system is hypothesized to be a major determinant of whether or not an individual actually uses it. The attitude toward using a system is a function of two major beliefs: perceived usefulness and perceived ease of use. Perceived usefulness (PU) is an individual's believes that using a particular system would enhance his job (Davis, 1989). Perceived ease of use (PEOU) is a person believes that using a particular system would make that person free from effort.

In TAM2 Venkatesh and Davis (2000), removed the attitude variable from the previously model, as it does not fully mediate the relationship between PEOU and PU to behavioral intention. Across many empirical tests of TAM, PU and PEOU have consistently been the determinants of usage intention. The role of

intention as predictor of behavior usage is critical and has been well established in information system and the study references (Ajzen, 1991).

TAM proposed that PU and PEOU are determined by external variables relative to the use of a specific system (Al-Busaidi & Al-Shihi, 2010). In TAM2 Ventakesh & Davis (2000), suggests that these external variables might be related to subjective norm, image, job relevance, output quality and result demonstrability. Even though TAM provides common external variables that might affect the PU and PEOU of an information system, these external variables may not be the best fit for every information system including in learning system. The external variables that might influence the technology acceptance vary according to the target user of the technology (Al-Busaidi & Al-Shihi, 2010).

In this research the external variable will be management support since organizational decision makers management is responsible for information system issues in an organization (Chatzoglou et al., 2010). The alternative systems are represented using a variable design which categorized as external variable within the Fishbein paradigm as discussed before (see page 4). Thus, the TAM model suggests that management support as the variable that will affect the PU and PEOU in this research.

2.2.2. Perceived Usefulness (PU)

Perceived Usefulness is defined as the individual's perception that using the new technology will enhance or improve her/his performance (Davis, 1989). Specifically, it refers to effectiveness at work, productivity (time savings) and the importance of the system for the individual's work. On the words of Davis,

Bagozzi, and Warshaw (1992), PU refers to consumers' perceptions regarding the outcome of the experience.

PU means that individuals have a tendency to use a technology only to the extent that they think that such technology will enhance their job performance or that they will be benefitted from using that technology (Davis, 1989). PU is defined as the total value that individuals perceive from using a new IT. Individuals evaluate the affect of their behavior in terms of PU and set their choice of behavior on the desirability to the usage of a new technology. The PU construct of TAM has been used extensively in IS research, and has strong empirical support as an important predictor of acceptance of IT (Kim et al., 2007).

Across many empirical tests of TAM, perceived usefulness has consistently been a strong determinant of usage intentions. Since perceived usefulness is such a fundamental driver of usage intention, it is important to understand the determinants of this construct and how their influence changes over time with increasing experience using the system (Chatzoglou et al., 2010).

Perceived usefulness also seen as being directly impacted by perceived ease of use. According to TAM, perceived usefulness is influenced by perceived ease of use because the easier the system are to use the more useful it can be (Ventakesh & Davis, 2000).

PU of e-learning systems has appeared as significant factors in literature on e-learning systems (Ngai et al., 2007 ; Selim, 2003). Selim (2003) hypothesized that the PU of an e-learning course is determined by the following characteristics: course interactivity; multimedia content that allows students to work rapidly; course facilitated study such as online contents, online

communications with instructors and other students, etc., and increased students' learning productivity and efficacy.

By applying this definition to the research context, then, the usefulness refers to higher education students' perception that using the e-learning as learning medium would enhances the outcome of their learning experience. These perceptions influence the higher education students' intention to adopt e-learning as complement in their learning process at class. Park (2009), have argued about perceived usefulness and they were found it will influence the intention of higher education students in using e-learning.

2.2.3. Perceived Ease of Use (PEOU)

PEOU is as a degree to which a person believes that using a particular system would be free from effort. PEOU represents the degree to which a system perceived not to be difficult to understand, learn, or operate (Davis, 1989). Agarwal & Karahanna (2000), also found the empirical support for a significant positive relationship between PEOU to the usage of a specific IT. By applying this to the research context, perceived ease of used is refers to higher education students' perception that using e-learning will involve a minimum effort to their activities in learning process.

As well as PU, PEOU also take a big part in shaping the user behaviour in using e-learning (Chatzoglou, 2010). It will concern on the effective way especially to free from effort perceived by the user in using e-learning. In short, the PEOU associated with the user-friendliness of the systems in using e-learning and that e-learning itself. One example of the factors that contribute towards the unfriendliness of some websites of internet user need a long time download it.

According to TAM, perceived ease of use has dual effect, direct and indirect, on consumers' intention. The direct effect is explained by the fact that in decision making, users perceived to minimize effort in their behaviors as their perceptions regarding the ease of use means using a system will make them free of effort (Venkatesh, 2000). The indirect effect is through usefulness that is influenced by ease of use, because the easier a technology is to use, the more useful it can be (Venkatesh, 2000; Davis et al., 1989). The easier and more effortless a technology is, the more likely users intend to use this technology of e-learning.

PEOU has appeared as significant factors in literature on e-learning systems (Ngai et al., 2007; Selim, 2003). Selim (2003), investigated the effect of PEOU of course websites on university students' intention to use those websites. He hypothesized that the critical factors of PEOU were: consistency, flexibility, and efficiency in the use, and ease of understanding of content in course websites. He found that the PEOU of course websites have significant influence in determining students' intention to use a course websites.

2.2.4. Management Support

In TAM, there is also external variable that will affect perceived usefulness and perceived ease of use (Meli, 2008), which is in this research the external variable that support the Technology Acceptance Model is management support (Chatzoglou et al., 2010). In the research of Muzid and Munir (2005), found that e-learning implementation does not only look the e-learning from useful factors, but more about the willingness and readiness of an institution to

adopt e-learning system. This institution includes the university leader as the rules maker, management, lecturers, and the students itself.

In general, variables related to the use of information technology could be grouped into four categories (Park, 2009): individual context, system context, social context, and organizational context. Individual context means willingness of an individual to use technology. System context emphasize the supported system of a technology used. Social context means social influence on personal perception (perceived usefulness & perceived ease of use) of information technology. While, organizational context emphasizes any organization's support on individual's perception to adopt a technology.

Organizational support is an integral part of the organizational environment where information systems are utilized. Organizational support has been found to have a positive impact on information system utilization (Igbaria, 1990, cited from Chatzoglou et al., 2010; Igbaria et al, 1997). There are two forms of organizational support. First, the support provided by the information system function which improve the quality of information system utilization by lowering or removing the barriers to adoption and secondly is the support provided by the management (Igbaria, 1990, cited from Chatzoglou, 2010; Igbaria et al, 1995).

Management support should have a positive impact on information system utilization. As organizational decision makers, management is responsible for information system issues available in their institution. They have to identify the role of technology and information system should play in their organization, to make decisions as to whether and when an innovation is worth adopting into the

organization. Thus management support of end users significantly improves technology usage in an institution (Igbaria et al 1995; 1997).

Management of an institution should focus its efforts on providing internal and external support to end-users, if it aims at a successful utilization of computers in the workplace. Internal support can take many forms, such as encouragement to use and experiment with computers, provide user-friendly software and educational programs (Igbaria et al., 1997).

There are some factors needed in e-learning implementation (Muzid & Munir, 2005), they are:

- Consciousness from all party in the university institution, management, human resource, lecturers, and students about the importance of e-learning.
- The willingness and abilities of the human resource including management to support the e-learning implementation system.
- Availability of the supporting facilities and equipment.
- Up to date information.
- Socialization.

Furthermore, management support has been found to affect subjective norms through a system (Chatzoglou et al., 2010). In order to be adopted, e-learning system should have needs analysis on e-learning in a university. The university should consider that e-learning is as the complementary system that can help completed the learning process at the class. As the complement in learning process, e-learning system have to run by a good management support, has usefulness, and user friendly. Here, to create a good system, a good management support from institution is really needed (Muzid & Munir, 2005).

2.3. Intention to Adopt E-Learning

Intention is a determination to act in a certain way or to do a certain thing (Bratman, 2003). There is a documented impact of intention to use on actual use of IT (Greer & Murtaza, 2003). According to Ajzen (2001), intention plays an important role in guiding human behavior, and a stable intention is better predictor of individuals' behavior. Individuals' intention capture the motivational factors that influence their behavior, and moreover, indicate how hard individuals are willing to try make an effort in order to perform the behavior.

Davis, et al. (1989), states that perceived usefulness was a strong determinant of intention to adopt a technology, and perceived ease of use was a significant secondary determinant of intention to adopt technology. Some studies suggest that PEOU does not have an effect on intention to use an IT (Gefen & Straub, 2000), while others show that PEOU has significant effect on intention to use or actual use of IT (Hong et al., 2001; Venkatesh et al., 2003). Venkatesh and Morris (2000), found that PU has a strong persistent effect on individuals' intention to use IT, and PEOU has a smaller effect (Bhattacherjee & Premkumar, 2004). Even Davis (1989), found that PU has much stronger effect on intention to use or actual use of IT than PEOU, which suggests that individuals tend to focus more on the function or quality or value of a system than on its ease of use (Chan & Teo, 2007).

Some research founded that intention has influence to the actual usage of a technology (Davis, 1989; Venkatesh, 2000; Venkatesh and Davis, 2000; Moon and Kim, 2001). In the original TAM, the variables of intention mediate the effect of PU and PEOU on technology acceptance (Kim et al., 2007).

According to Ong et al. (2004), the e-learning system is relatively new IT. Therefore, Ong et al. argued, the existing constructs of TAM cannot fully explain affect of intention to the usage of e-learning systems. In West Sumatra itself, e-learning has already known and use as one of a new way to complete the learning process at some of higher education institution even though in limited amount of usage. Thus, since the amount of e-learning usage is limited and limited information about the actual usage of e-learning in West Sumatra, the researcher will not include the actual usage variable into the research. This research is more proposing a direct effect of "perceived usefulness" and "ease of use" on intention.

2.4. Review of Previous Studies and Hypothesis

2.4.1. Perceived Usefulness (PU) and Intention to Adopt E-learning

According to TAM technology usage is determined by behavioral intention, with the exception that intention is viewed as being jointly determined by the person's attitude toward using the system and PU (Davis et al., 1989). PU is defined as the user's subjective probability that using a specific application system will increase his or her job performance. This word is followed by the word useful which means: "capable of being used advantageously". If a system has high PU means user believes in the existence of a system (Meli, 2008).

Venkatesh et al. (2003), found that PU has a strong persistent effect on individuals' intention to use a technology. Similarly, Davis (1989) found that PU has much stronger effect on intention to use or actual use of information and technology than PEOU. Additionally, Igbaria et al. (1995); Igbaria et al. (1997); Agarwal & Karahanna (2000); Venkatesh & Davis (2000); Moon & Kim (2001); Hong & Tam (2006), Chan & Teo (2007), Chatzoglou et al. (2010), also reported

that perceived usefulness is significant and positively influences the intention to adopt a technology. Therefore, the following hypothesis is proposed:

H1: Perceived usefulness of e-learning usage will have a positive effect on intention to adopt e-learning.

2.4.2. Perceived Ease of Use (PEOU) and Intention to Adopt E-learning

PEOU refers to the degree to which the prospective user expects the target system to be free of effort (Davis et al., 1989). This followed by the definition of "ease": "freedom from difficulty or great effort". Even though Davis (1989), found PU is more correlated to intention but he also found a significant direct impact of PEOU on intention. Regression analyses suggest that perceived ease of use may actually be a causal antecedent to perceived usefulness, as opposed to a parallel, direct determinant of system usage. Implications are drawn for future research on user acceptance.

Yuadi (2009), analyzed about TAM on digital library found when a digital library make a clear design portal by paying attention to terminology, lay out, and navigation which is not confusing user will increase the perceived ease of use of digital library, which automatically increase the intension to use the digital library. Similarly, Gefen (2003), Ma & Liu (2004), Hong & Tam (2006), Chan & Teo (2007) also found that PEOU has significant impact to the individual's intention to adopt a system. Based on the literature above, the following hypotheses are proposed:

H2: Perceived ease of use of e-learning usage will have a positive effect on intention to adopt e-learning.

2.4.3. Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)

TAM also incorporates a causal relationship between PEOU and PU, advocating that a system would be perceived to be more useful if it is easier to use (Vijayasarathy, 2004). Ventakesh & Davis (2000), focused on understanding the antecedents of PEOU on PU. Users will build a higher PU for a technology if that technology has a higher PEOU because PEOU can affect working efficiency of the users. Thus, users will perceive that the system is very useful. Moreover, when users perceive that a certain technology is very easy to use and can significantly improve their working efficiency, and then users will perceive that the information system is useful (Venkatesh & Davis, 2000; Davis, 1989). Additionally, Lin & Wu (2004), Raaij & Schepers (2006), Chatzoglou et al. (2010), also reported that perceived ease of use is significant and positively influences the perceived usefulness. Therefore, the following hypothesis is proposed:

H3: Perceived ease of use of e-learning usage will have a positive effect on perceived usefulness.

2.4.4. Management Support

There are many studies in the information systems' literature that have extended the TAM model by adding external variables concerning to technology features, research situation and aim (Kim et al., 2007). According to TAM, management support, being an external variable to the model, influences perceived usefulness and perceived ease of use; there is also evidence in the literature supporting the positive relationship among these variables (Igbaria et al., 1995; 1997; Kim et al., 2007).

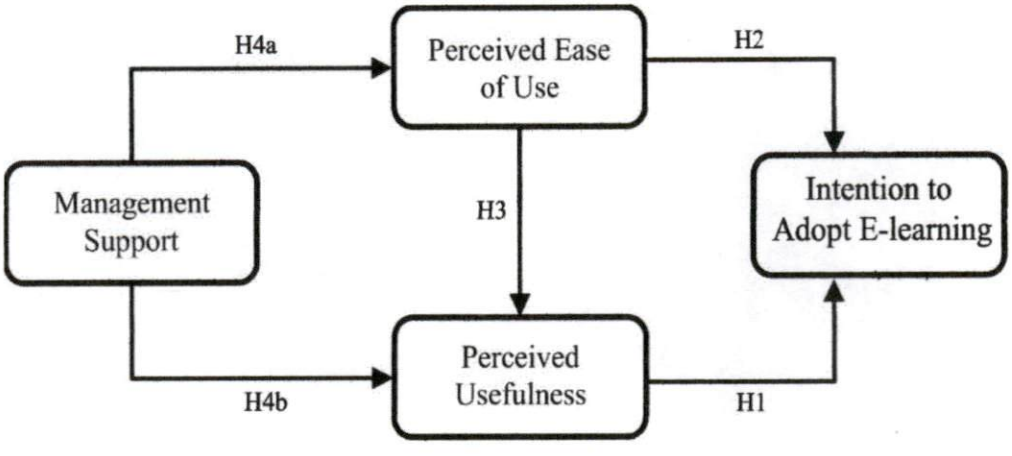
Management support has been argued to influence system success, with regard to the adoption of a new system (Igbaria et al., 1997; Lee et al., 2005). Lin & Wu (2004), found that management support directly affect perceived usefulness of systems. Therefore, lack of organizational support is regarded as a major barrier to the successful utilization of a system (Igbaria, 1990, cited from Chatzoglou et al., 2010; Igbaria et al., 1997; Kim et al., 2007). The factor of management support was added to the model to reflect adequately the support and promotion offered by management in the acceptance of a technology (Kim et al., 2007). Thus, the following hypotheses as proposed:

H4a: Management support will have a positive effect on perceived usefulness of e-learning usage.

H4b: Management support will have a positive effect on perceived ease of use of e-learning usage.

2.5. The Research Model

Part of the model developed from research conducted by Chatzoglou, 2010. Based on the review of the literatures above and the hypothesis, the researcher built a theoretical model of the research as follows:



CHAPTER III

RESEARCH METHODS

3.1. Research Design

This research will use survey research method. This method chosen because this method can describes the factual condition that happen and also can answer the questions about characteristic, relation, and impact between each of variables. This research will use quantitative research model which will determine the interaction between all variables. Quantitative research design had been selected in order to find out the appropriate answers to the research questions and to test the hypotheses. The research framework also suggested this type of design. Here management support, perceived usefulness, and perceived ease of use as independent variables and preferences of intention to adopt e-learning was being the dependent variable of this research, the researcher intended to identify whether any relationships exists between these measured variables or not.

3.2. Population and Samples

A survey about intention to adopt e-learning was chosen for this study. The target population in this research are college students at four universities in West Sumatra. Those four universities consist of two state universities they are Andalas University and Padang State University, and the rest are two private universities that is Putra Indonesia University and Bung Hatta University. Those four universities are chosen because they have used online academic information system already and has big amount of college students at West Sumatra.

In Structural Equation Modeling (SEM), sample size plays important role in estimation the research model. Hair et al. (1998) suggested that a critical sample

size to a model in using SEM refer on the size ranging between 100 – 200 samples. In order to achieve a sufficient sample size, the researcher distributed 200 questionnaires to college students who take bachelor degree at four target universities as mentioned before. The samples taken from each of universities are 50 respondents, and the total samples are 200 samples. Moreover, the sampling method use in this research is convenience sampling because of the limitation of research time.

3.3. Data Types and Sources of Data

a. Primary Data

Primary data will be gathered through questionnaire and filled directly by students from universities in West Sumatra. The total questionnaires are 200 as stated above and distributed at four universities in West Sumatra where the e-learning exist. The target universities are Andalas University, Padang State University, Bung Hatta University, and Putra Indonesia University which develop an electronic learning system become tools in supporting learning process.

b. Secondary Data

The secondary data is collected from any reading materials and previous research which relevant the topic discussed such as journals, released articles and articles from internet.

3.4. Data Collection Method

- Field Survey

The first method used in gathering data for this research is using field survey by using questionnaires. These questionnaires will describe about intention to adopt e-learning in higher education students at West Sumatra. These questionnaires distributed to higher education students at West Sumatra where their university has already use online academic information system. Researcher distributed the questioner directly to the students who take bachelor degree at four universities chosen; Andalas University, Padang State University, Putra Indonesia University, and Bung Hatta University. Since this research used convenience sampling method, the researcher distributed the questionnaire to the target samples which easily found by the researcher at the target universities. The students filled the questionnaire and gave it back at the day questionnaire distributed to the students because the researcher waited for the students to fill the questionnaire in case of the respondent need more explanation about the questionnaire. The collecting data was held during June 2011.

- Literature Study

  The data also gathered by using and analysing any literature such journal, article and internet based on topic discussed. These data used in literature review which related to e-learning development and TAM. These data are used to support this research to strengthen the theory or the real fact of e-learning reference to any previous research, any update information and current reality of the variable to the e-learning system.

3.5. Variables and Measurement

A Structured questionnaire was used in this study to collect data. The researcher utilized four different sets of questionnaires to measure the variables. In the questionnaire, there were four sections, they are perceived usefulness, perceived ease of use, management support, and intention to adopt e-learning.

Perceived usefulness will be measured by using 6 items (Perceived usefulness section) developed by Davis (1989). It will derive list of item of perceived usefulness:

- Using e-learning in my study would enable me to accomplish tasks more quickly
- Using e-learning would improve my learning performance
- Using e-learning in my learning activity would increase my productivity
- Using e-learning would enhance my learning effectiveness
- Using e-learning would make it easier to do my assignments
- I would find e-learning useful in my learning activity

Perceived ease of use will be measured by using 6 items (Section perceived ease of use) developed by Davis et al. (1989). It will derive list of item of perceived ease of us:

- Learning to use e-learning would be easy for me
- I would find it easy to get e-learning to do what I want
- My interaction with e-learning would be clear and understandable
- I would find e-learning to be flexible to interact with
- It would be easy for me to become skillful at using e-learning
- I would find e-learning easy to use

Management support will be measured by using 4 items (Section Management Support) developed from e-learning adoption survey. It will derive list of item of management support:

- The university strongly encourages the use of e-learning in learning process
- The use of e-learning in learning is important to the university
- My department is committed to a vision of using e-learning in learning process
- My department is committed to support my efforts in using e-learning in learning process

Intention to adopt e-learning will be measured by using 3 items (Section Intention to adopt e-learning) developed by Ventakesh et al., (2003). It will derive list of item of intention to adopt e-learning:

- I intend to use e-learning in the next semester
- I predict I would use e-learning in the next semester
- I plan to use e-learning in the next semester

However, for all of these constructs, items were adopted in the context of higher education students in West Sumatra to measure appropriately each of variables which was developed by the previous researchers. All of these variables used 5 point Likert scale to measure all these variables which range from 1 (strongly disagree) to 5 (strongly agree).

3.6. Operational definition

Operational definition is an identification process of an object by distinguishing it from its background of empirical experience. There are four variables; perceived usefulness (PU), perceived ease of use (PEOU), management support, and intention. Each of variables consist of items which directly used became research questions.

a. Technology Acceptance Model (TAM)

- Management Support

  Management support is the external factor that will influence the e-learning perceived usefulness and e-learning perceived ease of use (Chatzoglou et al., 2010).

- Perceived Usefulness (PU)

  The research analyse whether the college students believe that using a particular e-learning system will influence them to the intension to use e-learning (Davis, 1989).

- Perceived Ease of use (PEOU)

  The research analyse whether the college students believe that using a particular e-learning system will make them free from effort influence them to the intension to use e-learning (Davis, 1989).

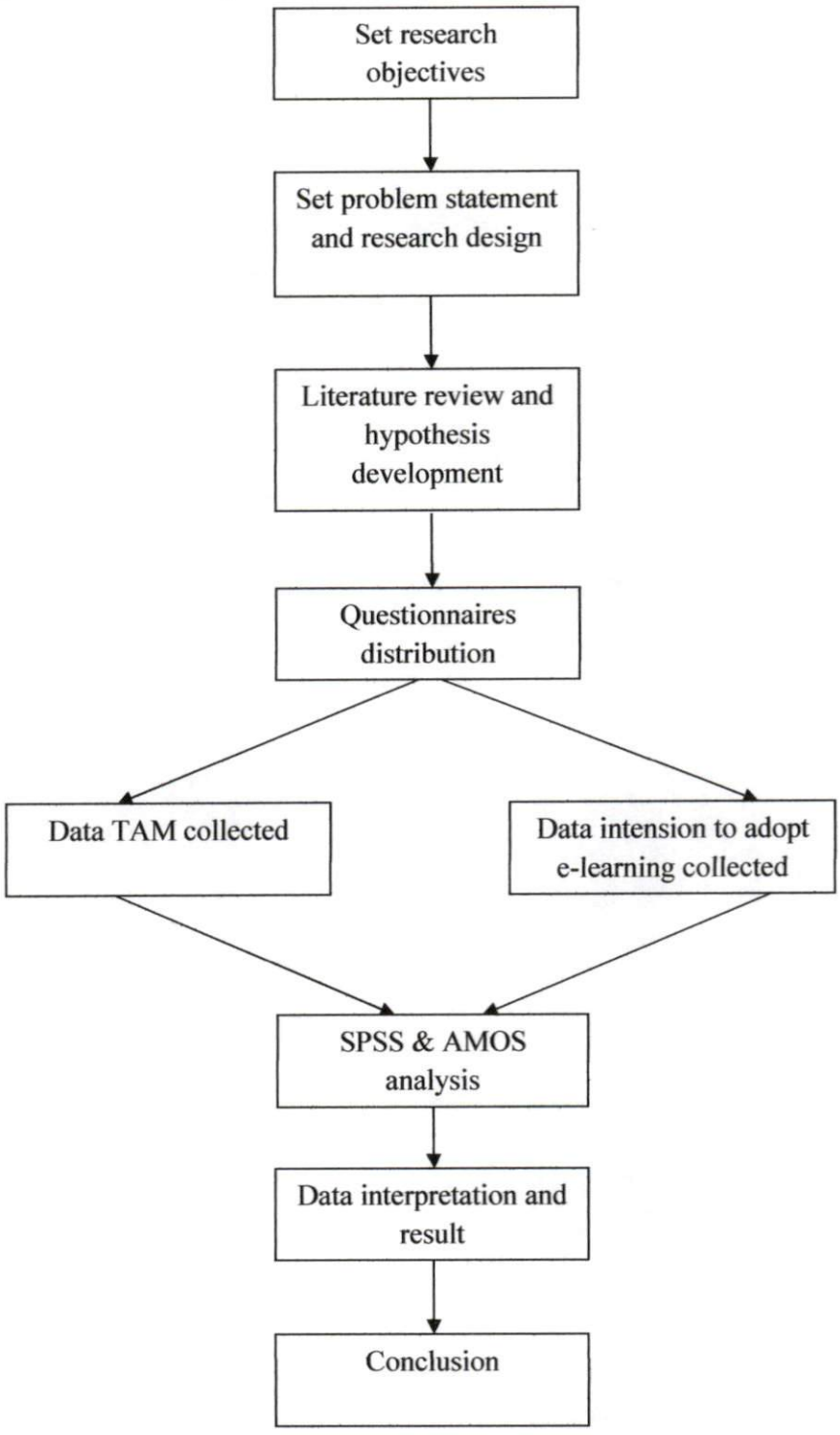
b. Intention

Analysis of the degree to which a college students believes he/she will be using and adopting e-learning by regressing them use the SPSS analysis to know how strong the TAM influence college students intention to adopt e-learning (Ajzen, 1991).

Table 3.1. Operational Definition

Variable	Definition	Sub Variable	Number of Item	Source
Technology Acceptance Model (TAM)	Technological acceptance model (TAM) is a theory map the model how the user process to accept and use technology. TAM will influence students' intention to adopt e-learning	Perceived Usefulness	6 Items	Davis (1989)
		Perceived Ease of Use	6 Items	Davis (1989)
Management Support	Management support defined as perceived level of general support offered by top management, including encouragement and resource support.	Management support	4 Items	e-Learning adoption survey (accessed on: http://elearningfundi.net/survey/index.php?sid=37667)
Intention to adopt e-learning	Intention is a determination to act in a certain way or to do a certain thing. Intention to adopt e-learning means that a determination to use technology of e-learning in learning process.	Intention	3 Items	Ventakesh et al. (2003)

Figure 3.1. Research process



Source: Developed based on the current study.

3.7. Data Analysis

This research is intended to test a model that explained factors determining intention to adopt e-learning in higher education students. The questionnaire will be used as the instrument in this research to get the variable research data; Technology Acceptance Model (TAM) and intention to use e-learning. The kind of data is primary data because the data get directly from the higher education students in West Sumatra that has already implemented the e-learning system as the respondent. The statistical tools which are used in this research are SPSS 19 and Structural Equation Model (SEM). SPSS is needed to analyze the respondent characteristic in represent the frequency and percentage of respondent data. Beside that this tools also used to determine the validity, reliability, and also normality of this research. Validity testing used factor analysis in which showing the component of each items in one variables. Reliability testing determined the Cronbach's alpha of each variables and normality test is refer to value of Skewness among variables in this research.

The data will be analyzed using Structural Equation Model (SEM) by AMOS as software application. This software provides information about goodness-of-fit model and relationship among the hypothesis. Moreover SEM was commonly used measured of fit include:

- Chi-Square a fundamental measure of fit used in the calculation of many other fit measures. Conceptually it is a function of the sample size and the difference between the observed covariance matrix and the model covariance matrix.

- Akaike Information Criterion (AIC)
  - A test of relative model fit: The preferred model is the one with the lowest AIC value.
  - $AIC = 2k - 2\ln(L)$
  - Where k is the number of parameters in the statistical model and L is the maximized value of the likelihood of the model.
- Root Mean Square Error of Approximation (RMSEA)
  - Another test of model fit, good model are considered to have a RMSEA of .05 or less. Model whose RMSEA is .1 or more have a poor fit.
- Standardized Root Mean Residual (SRMR)
  - The SRMR is a popular absolute fit indicator. A good model should have an SRMR smaller than .05.
- Comparative Fit Index (CFI)
  - In examining baseline comparisons, the CFI depends in large part on the average size of the correlations in the data. If the average correlation between variables is not high, then the CFI will not be very high.

A fit model reflects that the model proposed in the research is fit with the sample, if so the model is justifiable for factors determining higher education students' intention to adopt e-learning. Thus higher education students also can represent the hypotheses which is accepted or rejected based on current ratio and also significance level of 0.05.

Table 3.2. Evaluation of SEM with Goodness of fit Measure

Types of Measure	Goodness of Fit Measures	Recommended Level of Acceptable Fit
Absolute Fit Measure	Goodness of Fit Index (GFI)	Greater than .90
	Root Mean Square Error of Approximation (RMSEA)	Under .08
Incremental Fit Measure	Adjusted Goodness if Fit Index (AGFI)	Greater than .90
	Turker – Lewis Index (TLI)	Greater than .90
	Normed Fit Index (NFI)	Greater than .90
	Comparative Fit Index (CFI)	Greater than .90
Parsimonious Fit Measure	Normed chi-square ($\chi 2$/df)	Lower limit 1.0 Upper limit 2.03/ 3.0 or 5.0
	AIC	Smaller positive value indicate parsimony

- Source: Tabachnick and Fidell (2000); Hair et al (1998); Byrne (2001).

CHAPTER IV

ANALYSIS AND RESULTS

4.1. Survey Results

The result of this survey can be seen from the number of questioner have been distributed to college students in West Sumatra. Data gathered by distributing questioner directly to college students in four universities at West Sumatra (Andalas University, Padang State University, Putra Indonesia University, and Bung Hatta University) and take about 15 minute to fill in the questioners.

Table 4.1 Survey Result

Survey	Number of questioner
Distributed	200
Returned	200
Analysed	200

From table 4.1, 200 questioners have been distributed to college students at four universities in West Sumatra. All questioners can be gathered by the researcher and all of them can be entered into subsequence analysis.

4.2. Respondent Characteristic

Table 4.2 Respondent Characteristic

Mean (SD)	Range	Frequency	Percent
Gender	Male	104	52%
	Female	96	48%

Mean (SD)	Range	Frequency	Percent
Semester	1	-	-
	2	22	11%
	3	-	-
	4	39	19.5%
	5	-	-
	6	54	27%
	7	-	0.5%
	8	71	35.5%
	Others	14	7%
Faculty	Economics	44	22%
	Law	11	5.5%
	Social Politics	35	17.5%
	Agriculture	3	1.5%
	Technics	33	16.5%
	Literature	14	7%
	Faring	6	3%
	Pharmacy	6	3%
	Medical	2	1%
	Others	46	23%
Period of using internet	< 1 year	4	2%
	1 - 5 years	86	43%
	6 – 10 years	89	44.5%
	>10 years	21	10.5%
Frequency of using internet in a week	1x	8	4%
	2x	7	3.5%
	3x	18	9%
	4x	16	8%
	5x	27	13.5%
	6x	20	10%
	7x	104	52%

Mean (SD)	Range	Frequency	Percent
Place to access internet	Campus	18	9%
	Internet café	54	27%
	Home	117	58.5%
	Others	11	5.5%
Gadget	PC	72	36%
	Notebook	100	50%
	Mobile phone	28	14%
Internet function	Academic	88	44%
	Commercial	7	3.5%
	Entertainment	63	31.5%
	Communication	35	17.5%
	Others	7	3.5%
Using internet for learning process	Yes	196	98%
	No	4	2%
Intended use of using internet in learning process	To do assignment	114	57%
	Learning activities in the class	4	2%
	Complementer of class material	78	39%
	Others	3	1.5%
Download class material from internet	Yes	184	92%
	No	16	8%
Number of subjects	1	10	5%
	2	29	14.5%
	3	32	16%
	4	26	13%
	5	63	31.5%
	Others	28	14%

Mean (SD)	Range	Frequency	Percent
Definition of e-learning	Learning activities through internet media based	187	93.5%
	Learning systems build to make communication between students and lecturers becomes easier	6	3%
	A learning subject through internet	5	2.5%
	A learning subject about electronic system	2	1%
University provides free Computer that is connected to the internet	Yes	174	87%
	No	26	13%
University provides free Wi-Fi	Yes	197	98.5%
	No	3	1.5%
Students are free to use Wi-Fi	Yes	178	89%
	No	22	11%

From Table 4.2 Respondent Characteristic, the result indicates that mostly the respondents are male with (52%) from the total of respondents. And the rest (48%) is female. They are at the second semester (11%), fourth semester (19.5%), sixth semester (27%), eighth semester (35.5%), and the rest of respondent are in the others semester (7%). The respondent comes from different faculties, from economics faculty (22%), from law faculties (5.5%), from social politics faculty

(17.5%), from agriculture faculty (1.5%), from technics faculty (16.5%), from literature faculty (7%), from faring faculty (3%), from pharmacy faculty (3%), from medical faculty (1%), and the rest are from others faculty (23%).

Respondent period of using internet less than one year (2%), one year until five years (43%), six years until 10 years (44.5%), and more than ten years (10.5%). Their frequency of using internet in a week, 1 day per week (4%), two days per week (3.5%), three days per week (9%), four days per week (8%), five days per week (13.5%), six days per week (10%), everyday (52%). The respondent access internet from campus (18%), internet cafe (54%), home (117%), and other places (5.5%). Gadget used by the respondent to access internet PC (36%), Notebook (50%), and mobile phone (14%).

The respondent uses internet for academic (44%), commercial (3.5%), entertainment (31.5%), communication (17.5%), and others (3.5%). 98% of respondent using internet for learning process, and 2 % of respondent does not use internet for learning process. Their intended use of using internet in learning process are to do assignment (57%), learning activities in the class (2%), complement of class material (39%), and for others (1.5%). 92% of respondent taking subjects which need to download class material from internet, and 8% of the respondent does not take any subject that asked students to download class material from internet. Number of subjects that asked students to download class material from internet in a semester are one subject (5%), two subjects (14.5%), three subjects (16%), four subjects (13%), five subjects (31.5%), and others (14%).

From 200 respondents, 93.5% choose the right answer for definition of e-learning, learning activities through internet media based, and the rest choosed the wrong choice those are, e-learning is a systems build to make communication between students and lecturers becomes easier (3%), e-learning is a learning subject through internet (2.5%), and e-learning is a learning subject about electronic system (1%).

The university has provides free computer that is connected to internet chooses by 87% of respondent, 13% of the respondent said their university does not provides free computer that is connected to the internet. 98.5% of respondents said their university provides free Wi-Fi, and 1.5% of the respondent said their university does not provide free Wi-Fi for students. 89% of respondent said students are free to use Wi-Fi provides by the university, and the rest of respondent (11%) said students are not free to use Wi-Fi provides by the university.

4.3. Descriptive of Items Respond Each Variable

Description of each item obtained from field survey is demonstrated in the following sections. The scores for each item reflect the level of perceived overall respondents. The items are measured using 5 point Likert's scale. The higher the score means the more positive respond of the respondents.

Table 4.3 Variable Perceived of usefulness (PU)

No	Items	Means
1	Using e-learning in my study would enable me to accomplish tasks more quickly	4.12
2	Using e-learning would improve my learning performance	3.97
3	Using e-learning in my learning activity would increase my productivity	3.93
4	Using e-learning would enhance my learning effectiveness	4.01
5	Using e-learning would make it easier to do my assignments	4.12
6	I would find e-learning useful in my learning activity	4.17

This table represent about the respondent perceived usefulness of e-learning. The survey results show that the respondents have perceived that e-learning useful in their learning activity. It can be seen from the highest respond of the item 6. The lowest score shows at item number 2 where the respondent perceived that using e-learning would improve their learning performance.

Table 4.4 Variable Perceived Ease of Use (PEOU)

No	Items	Means
1	Learning to use e-learning would be easy for me	3.89
2	I would find it easy to get e-learning to do what I want	4.00
3	My interaction with e-learning would be clear and understandable	3.84
4	I would find e-learning to be flexible to interact with	3.85
5	It would be easy for me to become skillful at using e-learning	3.85
6	I would find e-learning easy to use	3.86

Based on the survey results for e-learning perceived ease of use, it can be seen that the highest respond from respondent is on the item 2. It means that most respondents perceived they would find easy to get e-learning to do what they want. Meanwhile, the lowest score can be seen on the item 3 where the respondent perceived that e-learning ease of use is their interaction with e-learning would be clear and understandable being easy to use internet.

Table 4.5 Management Support

No	Items	Means
1	The university strongly encourages the use of e-learning in learning process	3.62
2	The use of e-learning in learning is important to the university	3.64
3	My department is committed to a vision of using e-learning in learning process	3.65
4	My department is committed to support my efforts in using e-learning in learning process	3.64

This table represent about management support on using e-learning in learning process. Based on the result, it can be seen that the respondents answer the highest respond on the item 3. It means that most respondents perceived their department is committed to a vision of using e-learning in learning process. Meanwhile, the lowest score can be seen on the item 1 which reflects a moderate level in terms of university encourages on the use of e-learning in learning process.

Table 4.6 Intention to Adopt E-learning

No	Items	Means
1	I intend to use e-learning in the next semester	4.06
2	I predict I would use e-learning in the next semester	4.24
3	I plan to use e-learning in the next semester	4.07

The highest score for variable intention to adopt e-learning represented on the table above. As shows by the item 2, the survey results found that most of respondent predict they would use e-learning in the next semester. It can be said that respondents has intention to adopt e-learning in their learning process.

4.4. Checking of Data Entry

4.4.1. Testing of Validity

The validity of measure refer to the degree to which the measurement actually measure what the research claim it measure and verifies that the conclusion draws no logical error (Garson, 2006). The following four variables are measured by multiple items: perceived usefulness (6 items), perceived ease to use (6 items), management support (4 items), and intention to adopt e-learning (3 items). The question of each variable is tested by factor analysis with factor loading must be more than 0.4 based on statistic book by Hair et al., (1998). A greater absolute value of factor loading will lead to the better the measures of underlying property or construct.

Table 4.7 Validity Testing

Component Matrix (a)

Variable	Item	Factor Loading
Perceive of Usefulness	PU 1	.645
	PU 2	.785
	PU 3	.757
	PU 4	.797
	PU 5	.709
	PU 6	.735
Perceive Ease of Use	PEOU 1	.799
	PEOU 2	.697
	PEOU 3	.849
	PEOU 4	.766
	PEOU 5	.786
	PEOU 6	.786
Management Support	MS 1	.634
	MS 2	.635
	MS 3	.864
	MS 4	.802
Intention to Adopt E-learning	I 1	.843
	I 2	.818
	I 3	.853

Based on Hair et al. (1998), factor loading greater than ±0.3 are considered to meet the minimal level; loading value of ± 0.40 are considered more important; and if the loading are ±0.50 or greater, they considered practically significant. From the table above all items of each variable are greater than 0.50, it means all items are significant and valid in this research.

4.4.2. Testing of Reliability

Reliability is intended to measure the extent to which a variable or set of variables is consistent in what is intended to measure (Hair et al., 1998). Reliability has different view with validity testing, while validity relate to how an items is measure and reliability measure the evidence of consistency of the research instruments, it refer to degree to which same value will be returned if measure it again on other occasion.

Table 4.8 Reliability Testing

Variable	Cronbach's Alpha	Item	Remark
Perceived Usefulness	0.833	6	Good
Perceived Ease of Use	0.871	6	Good
Management Support	0.710	4	Good
Intention to Adopt E-learning	0.785	3	Good

Cronbach's alpha was used to compute the reliability of scale of each construct. Scale reliabilities rang from 0,6 to 0,96, indicating that they exhibit an acceptable level of reliability (alpha >0,6) (Nunnally, 1978). Hair et al. (1998) suggest that usual lower limit for cronchbach's alpha is 0.7. Based on the analysis of the reliability, the result shows that the value of cronbach's alpha for each variable is greater than 0,7 and less than 0,90 which means the data is reliable to be processed.

4.4.3. Testing of Normality

The most fundamental assumption of multivariate analysis is normality (Hair et al., 1998). A simple test can be conducted to identify the distribution score of each variable. To get the value of normality, the author used SEM

AMOS. Ferdinand (2002), suggested that the data will be normal if the value of cr for skewness and kurtosis in SEM AMOS should be < 2.58 . To be more clearly, see the table 4.9 that show about the result of normality testing. The result from the table 4.9 indicates the normality of the data. Because all of the cr value of the data is < 2.58 means all of the data is normal.

Table 4.9 Normality Testing

Assessment of normality

Variable	Min	Max	skew	c.r.	Kurtosis	c.r.
PU1	3.000	5.000	.049	.282	.099	.286
PU2	3.000	5.000	-.024	-.139	.506	1.462
PU6	3.000	5.000	-.045	-.257	-.284	-.819
PU5	3.000	5.000	-.069	-.398	-.377	-1.089
PU4	3.000	5.000	-.012	-.072	-.530	-1.531
PU3	3.000	5.000	.009	.050	-.100	-.288
I1	3.000	5.000	.016	.092	.121	.350
I3	2.000	5.000	-.186	-1.076	-.377	-1.088
I2	3.000	5.000	-.242	-1.396	-.641	-1.851
PEOU1	3.000	5.000	-.361	-2.087	1.167	3.369
PEOU2	3.000	5.000	.000	.000	2.000	5.774
PEOU6	2.000	5.000	-.402	-2.321	.845	2.440
PEOU5	3.000	5.000	-.006	-.032	-.112	-.324
PEOU4	3.000	5.000	-.235	-1.359	.413	1.191
PEOU3	2.000	5.000	-.211	-1.221	.380	1.097
MS1	2.000	5.000	-.394	-2.274	.047	.136
MS4	2.000	5.000	-.139	-.801	-.252	-.728
MS3	2.000	5.000	-.304	-1.754	-.177	-.510
MS2	1.000	5.000	-.061	-.350	.430	1.241
Multivariate					98.734	24.715

4.5. Hypotheses Testing

4.5.1. Structural Equation Modelling (SEM)

The previous section presented detail of data checking process used in the research analysis. This section will be continued with description of statistical tool utilised to assess the developed hypotheses. In this study, analysis procedure was undertaken by using SPSS 19.0 for windows and AMOS 18.

Structural Equation Modeling (SEM) is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions. Structural Equation Models (SEM) allows confirmatory and exploratory modeling, meaning they are suited to both theory testing and theory development (Tabachnick & Fidell, 2000). The concepts used in the model then operationalized to allow testing of the relationships between the concepts in the model. The model is tested against the obtained measurement data to determine how well the model fits the data.

In the graphical analysis of SEM, there are several conventions of terms. Measured variable are termed observed or manifest variable; within the context of SEM methodology, they serve as indicators of the underlying construct that they are presumed to present. In other side, unobserved variable refers the abstract phenomenon that is unlikely to be observing directly, and is term latent variable, construct, or factor (Byrne, 2001; Tabachnick & Fidell, 2001). Furthermore the model is expressed graphically and it will explicate the relationship between latent variables and others (Bryne 2001).

The analysis of SEM is conducted using confirmatory factor analysis (CFA), the significant function of this is to strengthen of the regression path from

the factor to the observed variables. The structural model reflects estimation of a series structural equation that defines the relationship among unobserved variables. Based on Hair et al. (1998), there are three types of goodness of fit measures; absolute fit measures, incremental fit measures, and parsimonious fit measures. This research conducted absolute fit measure which identifies the overall model fit on the basis of the likelihood ratio chi-square statistic. The chi square with the statistical significant level above .05, implies that there are non significant differences the predicted and actual matrices and is likely to indicate the acceptable level of fit. Hair et al. (1998) argue that chi-square test become more sensitive as the number of indicator rise and "statistical non-significant does not guarantee that "correct" model has been identified".

Another measure of the absolute fit index that is deemed appropriate to confirm a model is GFI. It represents the overall GFI represents the degree to which the actual or observed covariance matrix is predicted by the estimated model. GFI deals with explained covariance, relative to total covariance. GFI values can range from 0.0 (poor fit) to 1.0 (perfect fit). In practice, a GFI value greater than 0.9 represents a strong fit. AGFI is an extension of GFI, which is adjusted by the ratio of degrees of freedom for the proposed model to the degrees of freedom for the null model. It is suggested that an AGFI equal to or greater than 0.9 indicates a good fit, while an AGFI that is greater than 0.8 is a sign of a marginal fit. RMSEA represents the square root of the ratio of the rescaled no-centrality index (i.e., the population discrepancy function) to the model's degrees of freedom. In other words, RMSEA is the discrepancy per degrees of freedom, measured in terms of the population, and so is relatively insensitive to sample

size. It is suggested that an RMSEA value of 0.05 or less indicates a close fit of the model, in relation to the degrees of freedom, and an RMSEA value of 0.08 or less indicates a reasonable error of approximation. An RMR which ranges from 0 to 1, with values less than 0.05 is considered to be a good fit. Degree of fit based on the comparison of the squared residual with the data (Hair et al., 1998).

Table 4.10 Evaluation of SEM with Goodness of fit Measure

Types of Measure	Goodness of Fit Measures	Recommended Level of acceptable Fit	Results of the research	Note for Testing Model
Absolute Fit Measure	(GFI) (RMSEA)	Greater than .90 Under .08	0.865 0.067	Moderate Acceptable
Incremental Fit Measure	(AGFI) (TLI) (NFI) Comparative Fit Index	Greater than .90 Greater than .90 Greater than .90 Greater than .90	0.826 0.903 0.840 0.917	Moderate Acceptable Moderate Acceptable
Parsimonious Fit Measure	Normed chi-square ($\chi 2$/df) AIC	Lower limit 1.0 Upper limit 2.03/ 3.0 or 5.0 Smaller positive value indicate parsimony	1.88 363.127	Acceptable

Source: Tabachnick and Fidell (2000); Hair et al (1998); Byrne (2000); Gefen et al. (2000); Bentler & Bonett (1980); Joreskog & Sorbom (1986).

Fit statistic indices of this research model were designated several fit indices, the statistic result can be seen in the table 4.10; GFI = 0.865; (RMSEA) = 0.067; (AGFI) = 0.826; (TLI) = 0.903; (NFI) = 0.840; (CFI) = 0.917; RMR =

0.022. These results have fulfilled the characteristic recommended level of acceptable fit of each index (see table 4.10). There are some indicators in moderating fit model, like GFI; AGFI; NFI. This research do not need to revise this model, as Gefen et al. (2000) indicated, GFI is best when the value is larger than 0.90 and is demonstrate marginally acceptable when the value is larger than 0.80; AGFI is acceptable when the value is larger than 0.80; the ratio of chi-square to degree of freedom is acceptable when the value is smaller than 5. Moreover it also supported based on expert recommendations, (Anderson & Gerbing, 1984; Marsh et al., 1996), the Adjusted GFI > 0.800 (AGFI; Joreskog & Sorbom, 1986), the adjusted NFI > 0.800 (Bentler & Bonett, 1980), and the Root Mean-Square Residual < 0.100 (RMS; Joreskog & Sorbom, 1986). It means according to the value of each indicator, this model doesn't need to be revised or the fit model is acceptable.

4.5.2. The Relationship among Variables

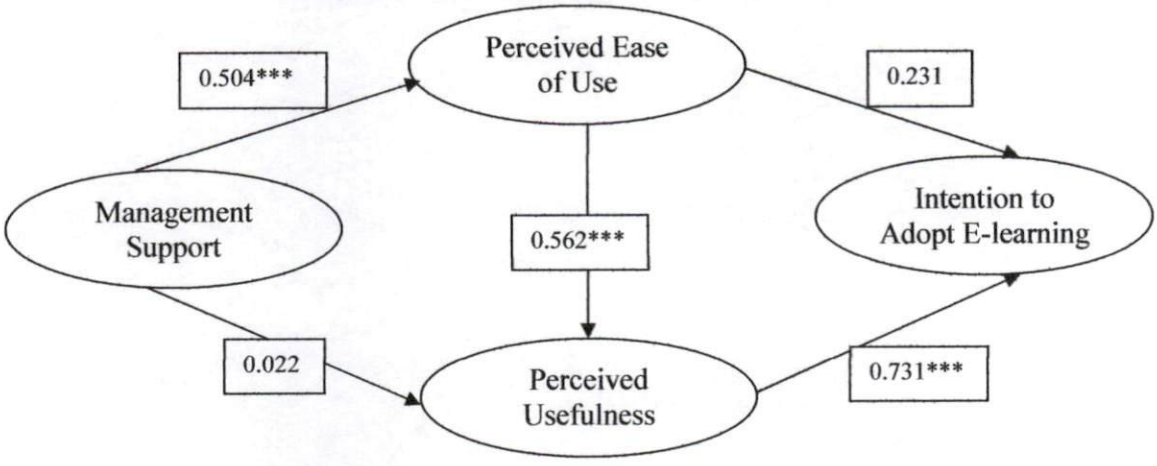
The initial theoretical model with standardized path coefficient is displayed in figure 4.11 the test statistic for parameter estimates is assessed by critical ratio (c.r.). It represents the parameter estimate divided by its standard error. Critical ratio values larger than 1.96 prove the path coefficient to be statistically significant at p< .05. The chi – square of the theoretical model was 277.127 with 147 degree of freedom (df). It was statistically significant at p < 0.001. a non significant chi – square shows support for believing that the differences of the predicted and actual matrices are non significant and it indicates an acceptable fit (Hair et al., 1998), therefore a non significant chi – square is desirable.

Table 4.11 Regression Weight

H	Path	Estimate	SE	CR	P	Judgment
H1	PU ← Intention to Adopt E-learning	0.731	0.189	3.859	***	Significant
H2	PEOU ← Intention to Adopt E-learning	0.231	0.129	1.787	0.074	Not Significant
H3	PU ← PEOU	0.562	0.095	5.939	***	Significant
H4a	PU ← MS	0.022	0.081	0.276	0.782	Not Significant
H4b	PEOU ← MS	0.504	0.136	3.696	***	Significant

Note: *significant at p<.05, **significant at p <.01, ***significant at p <.001

Figure 4.1 A Path Diagram for the Initial Theoretical Model



The hypotheses were tested by using Structural Equation Model (SEM). As a direct or indirect effect of the exogenous variables can be specified by identifying paths among variables, a path analysis was conducted to test the overall causal model. As discussed in the earlier section, the model has been tested to assess the overall fit of the model. Also, individual tests of the

hypothesized relationship were conducted. The critical t value (CR) used to assess the significance of the relationship between two path is 1.96 ($p<.05$). A CR value above 1.96 means the relationship of the causal model is significant. The results of the hypotheses testing are shown in table 4.12.

H1: Perceived usefulness of e-learning usage will have a positive effect on intention to adopt e-learning.

Hypothesis 1 investigated the perceived usefulness of e-learning usage positive effect on intention to adopt e-learning. Because the standard path coefficient of 0.731, the critical ratio value of 3.859 (> 1.96), and p = *** means it was statistically significant at $p < 0.001$, hypothesis 1 was supported.

H2: Perceived ease of use of e-learning usage will have a positive effect on intention to adopt e-learning.

Hypothesis 2 examined the positive relationship of Perceive ease of use on intention to adopt e-learning. Because the standard path coefficient of 0.231 and the critical ratio value of 1.787 (< 1.96) were not significant, therefore, the result did not support the hypothesis.

H3: Perceived ease of use of e-learning usage will have a positive effect on perceived usefulness.

Hypothesis 3 tested the relation between perceived ease of use e-learning usage and perceived usefulness. Because the standard path coefficient of 0.562, the critical ratio value of 5.939 (> 1.96), and p = *** means it was statistically significant at $p < 0.001$, this indicate that perceived ease of use has positive relationship on perceived usefulness, therefore, the result support the hypothesis.

H4a: Management support will have a positive effect on perceived usefulness of e-learning usage.

Hypothesis 4a investigated the positive influence of management support on usefulness of e-learning usage. Because the standard path coefficient of 0.022 and the critical ratio value of 0.276 (< 1.96) were not significant, hypothesis 4a did not support the hypothesis.

H4b: Management support will have a positive effect on perceived ease of use of e-learning usage.

Hypothesis 4b examined the positive effect on perceived ease of use of e-learning usage. Because the standard path coefficient of 0.504, the critical ratio value of 3.696 (> 1.96), and p = *** means it was statistically significant at p < 0.001, hypothesis 4b was supported.

Table 4.12 Summary of Hypotheses Testing

	Hypotheses	Results
H1	Perceived usefulness of e-learning usage will have a positive effect on intention to adopt e-learning	Supported
H2	Perceived ease of use of e-learning usage will have a positive effect on intention to adopt e-learning	Not Supported
H3	Perceived ease of use of e-learning usage will have a positive effect on perceived usefulness	Supported
H4a	Management support will have a positive effect on perceived usefulness of e-learning usage	Not Supported
H4b	Management support will have a positive effect on perceived ease of use of e-learning usage	Supported

4.6. Discussion of the Research Finding

This section addresses the discussion of the research findings on the basis of the model. The final model of this is presented in figure 4.1 and portrays the relationships among the hypotheses which illustrate the key findings of the research. A brief overview of the contribution is presented first and is then followed with discussions of the result.

4.6.1. The Relationship between Perceived Usefulness (PU) of E-learning on Student Intention to Adopt E-learning

The results of the hypotheses testing showed that PU has significant positive relationship with students' intention to adopt e-learning. The result reflects that student's intent to use internet through PU of the e-learning. There are many previous studies who have researched relationship between PU and intention (Igbaria et al., 1995; Venkatesh & Davis, 2000; Moon & Kim, 2001; Hong & Tam, 2006; Chan & Teo, 2007; Chatzoglou et al., 2010). PU defined as an individual's perception that use of technology will improve performance. Thus, it refers to effectiveness at work, productivity (time savings) and the importance of the system for the individual's work. (Davis, 1989).

Davis (1989), also found that PU has much stronger effect on intention to use or actual use of information and technology than PEOU. Additionally, Agarwal & Karahanna (2000); Moon & Kim (2001); Venkatesh & Davis (2000), proved the significant relationship between PU has directly impacted on the intention to adopt a system.

PU plays significant role in building perception of students to adopt e-learning, the usefulness leads on how the students can improve their performance, effectiveness, and productivity through e-learning. Nowadays students has to develop their study achievement as well, by gaining and explore the data and information, they can analyze what they should do to improve their study achievement. It directly gives significant contribution for their knowledge and skill improvement. Additionally, students could accessed the information and might be safe their time and capital to gain an important information in order to develop their knowledge and skill and improve their productivity in learning process. Consequently, the perception of e-learning usefulness positively impact on students' intention to adopt e-learning.

4.6.2. The Relationship of Perceived Ease of Use (PEOU) on Student Intention to Adopt E-learning

PEOU refers to the extent to which a person believes that using a system would be free of mental effort (Davis, 1989). Venkatesh (2000), believes that for any emerging information technology and information system, PEOU is an important determinant of users' intention of acceptance and usage behavior. PEOU will concern on the effective way especially free from effort perceived by the user in adopt a technology.

In short, the PEOU is associated with the" user-friendliness" of the e-learning. One of the factors that contribute towards the unfriendliness of e-learning through internet is some websites of Internet user is long downloading times (Ventakesh & Davis, 2000). Additionally, if e-learning can contribute the

user with the ease to use in gaining information relate in increasing students performance. PEOU facilitate students in term of easiness in access and gain the important information through e-learning.

Hypothesis 2 shows that PEOU does not have a significant impact on students' intention to adopt e-learning. It may relate on respondent characteristic on education level, all of them are higher education students where usually people in their age does not really take the hardness level of a system as a problem as long as that system has a function for them. Beside that from respondent characteristic on period of using internet, almost the respondent had been using internet for more than five years, which means the respondent had familiar with way to use internet that support them to adopt e-learning in their learning process. Researches before also found that PEOU has no significant impact to the intention to adopt a technology (Hu et al, 1999; Chatzoglou et al, 2010). Thus, hypotheses test in previous section have been contradictive to previous studies, it means that in this research, management support did not influence PEOU of e-learning in higher education students.

But based on the result of the research, e-learning PEOU can indirectly impact students' intention to adopt e-learning through e-learning PU of the students which will be discussed further at the hypothesis 3.

4.6.3. The Relationship between Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)

The test of hypotheses 3 found that PEOU has positive influences on PU in adopt e-learning. As explained in previous section, the model of this study showed

that PEOU is significantly related to PU. This finding support previous literature which stated that many researchers who have studied the relationship between PEOU and PU (Davis, 1989; Moon & Kim, 2001, Chatzoglou et al., 2010). TAM also incorporates a causal relationship between perceived ease of use and perceived usefulness, supporting that a system would be perceived to be more useful if it is easier to use (van der Heijden et al., 2001; Vijayasarathy, 2004).

TAM2 proposed PEOU from TAM as a direct determinant of PU (Davis et al., 1989). The result found in this research proposed that it is possible for an educational technology with a high level of PU is more likely to create positive perception of technology ease of use to the higher education students.

Moreover, if rely on hypothesis 2, there is empirical evidence accumulated that perceived ease of use is significantly linked to intention directly and indirectly through its impact on perceived usefulness. Since the result of the research found that PU has a significant relation to intention, thus the relation between PU and PEOU is that PU mediates the effect of PEOU on intention (Chatzoglou et al., 2010; Moon & Kim, 2001). More specifically there are evidences in the literature suggesting that although e-learning PEOU does not have a significant direct effect on students' intention to adopt e-learning, it can affect the students' intention to adopt e-learning indirectly, through e-learning perceived usefulness, similarly to what was actually found by Venkatesh et al., (2003). Because the easier a technology is to use, the more useful it can be. The easier and more effortless a technology is, the more likely the students intend to use this technology of e-learning.

4.6.4. The Relationship of Management Support on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of E-learning

Management support has been argued to influence system success, with regard to the adoption of a new system (Igbaria et al., 1997). According to TAM, management support, being an external variable to the model, influences perceived usefulness and perceived ease of use; there is also evidence in the literature supporting the positive relationship among these variables (Igbaria et al., 1995; Igbaria et al., 1997; Kim et al., 2007).

In this research the external variable is management support which means the factor of management support was added to the model to reflect adequately the support and promotion offered by management in the acceptance of technology (Kim et al., 2007). In the research of Muzid and Munir (2005), found that e-learning implementation does not only see the e-learning from useful factors, but more about the willingness and readiness of an institution to adopt e-learning system. This institution includes the university leader as the rules maker, management, lecturers, and the students itself. Thong, Hong, and Tam (2002), identified relevance, system visibility, and system accessibility as organizational context variables and reported that the management support affects both perceived usefulness and perceived ease of use of a digital library.

As hypothesized in section 4.12 H4a refer to impact management on e-learning perceived usefulness, the model demonstrated that management support was not significant influence on how students perceives usefulness in adopting e-learning. This part of this model did not support previous study of the impact management support on perceived usefulness.

The insignificant result may caused of e-learning is a new tools for the universities to apply in learning process. So, management parties at the universities still in introducing and adoption process to e-learning. The application of e-learning usage at these four universities also limited just for download the class material and searching for class assignment through internet. Meanwhile there is still so many ways to apply e-learning in learning process, for example students can learn through video, text based conferencing, video conferencing, mailing list and others. Beside that there is no direct explanation from the management of the universities to the students about e-learning, so the students do not know in deep about the usefulness and function of e-learning. This insignificant result also may cause of the universities lack of information technology (IT) assistance that can help the students in maximizing the function of e-learning in their learning process.

Meanwhile, management support consequently support the hypothesis 4b which refer to impact of management support on e-learning perceived ease of use since the result of the research show a positive relation between management support and e-learning perceived ease of use. It means the hypothesis 4b significant with the research before that management support will have positive influence on perceived ease of use. Thus, based on the result of the research management support can influence students' perception on e-learning ease of use.

CHAPTER V

CONCLUSION, IMPLICATION, LIMITATION, AND FUTURE RESEARCH

5.1. Conclusion of the Research

The purpose of this study was to investigate the factors determining intention to adopt e-learning in higher education students. To address the purpose of this study, the proposed hypotheses have been tested in previous section, and this chapter discusses the conclusion of the test result. This chapter presents the implications derived from the findings, the limitations of the research and suggestion for the future study. This chapter also illustrates the contribution of the study, the implication of the research, and the limitation for this study.

This thesis consists of five chapters; each chapter has been clearly elaborated in the previous section. Chapter one represents a picture of the overall study, preceded by an introduction and background of the research. Chapter two contains the literature review, followed by the development of the hypotheses of the research. A theoretical model was generated in chapter three which was then tested using structural equation modeling (SEM). The research processes are reported in chapter three encompasses an outline of the research methodology and includes the research paradigm, design, justification of the research approach and the measurement variables. The research methodology provides a guideline for obtaining the information which is analyzed in chapter four.

Chapter four provides the data analysis and result of the study. The primary purpose of this study was to develop and test the model of the variables which contribute to students' intention to adopt e-learning in higher education students.

These variables are: management support, perceived usefulness, and perceived ease of use. The result of SEM analysis demonstrated that perceived usefulness has significant influence in higher education students' intention to adopt e-learning, and management support has significant influence to perceived ease of use. Furthermore, perceived ease of use has a positive relation to perceived usefulness. Otherwise there are also several hypotheses which are rejected like perceived ease of use was not significant influence in intention to adopt e-learning and management support was not predictor for perceived usefulness.

Finally, this study provides a significant implication for parties in adjusting technology advance by adopt e-learning in students' learning process in their institution. The implication of this study due to university intention for higher education students, by facilitating supporting tools which can give significant influence in degree or intention to adopt e-learning in students learning process.

5.2. Implication, Limitation, Future Research

The present study examined a model which included management support, perceived usefulness, and perceived ease of use, as predictors to measure the factors influence higher students' intention to adopt e-learning. The result of this study provides significant implication, particularly associate with the current issues of technology advance in educational institution. The following section details the contributions made by this study, its implication, and limitation, also put forward suggestion for future studies.

5.2.1. Implication of the Research

The research provides several implications for improvement of the understanding of the relationship among management support, perceived usefulness, and perceived ease of use on students' intention to adopt e-learning in their learning process, especially in the context of higher education students at West Sumatra. The utility of this study is to support previous research from all variable. Besides, it found more vary and new result which not support previous research in some variables. The empirical evidence can be used to promote the use of the construct of management support and perceived characteristic in determining adoption of a new technology.

General implication of this research lead in higher education institution's intention on how they provides facilities and others tools which can give significant contribution for students to adopt e-learning in their learning process. There are specific actions must be conducted by institution in facilitation students in using e-learning:

- Education and Socialization

  Institution may provide any education for higher education students in order to increase their knowledge and skill in using e-learning in their learning process. Through this education program, students can get any information about what is e-learning, the function of e-learning and how to maximize the function of e-learning for their learning process. Some program which can be conducted in improving students' ability in adopting e-learning is like socialization, online tutorials, workshop, short training, seminar, and course for higher education students. Management parties also can cooperate with the

lecturers or class instructor to introduce e-learning to the students and to support students to adopt e-learning through their learning process.

In specific the implication of this research may lead to contribution from student union at the university to conduct any activities to help the management to introduce e-learning to the students. Student union can cooperate with the management of university to conduct some program relate to e-learning. For example student union can create a workshop about how to maximize the function of internet and another creative program to attract the students to adopt e-learning.

- Subsidy

Management may provide supporting tools such as computer which has already connected to the internet to facilitate students in accessing information related to their study easily in campus. This action also helps the students who do not have a notebook yet, or any portable gadget to access internet. Beside that, management parties may provide audio visual equipment in a class, so the students not only adopt e-learning based in internet, but they also can learn through video or record from compact disk (CD), video compact disk (VCD), and others.

- Internet Accessible

Internet access is a significant factor to improve the intention of higher education students in conducting their learning process based on technology advance. The management parties at the university may provide free access Wi-Fi in some area at campus in order to ease the students to access internet. Moreover the most important thing is the institution pasties should socialize

about the facilities given for students to let the students know that they can maximize the function of facilities given for them.

- Technical Support

Management should providing instructors with technical support, in form of computer specialists, instructional design specialists and trained assistants. It is essential to students' intention to adopt e-learning. Through this support, the management party of universities shows the students that the management is serious with the effort to develop the learning system at the university and they support students' activities to adopt e-learning in their learning process.

Furthermore, personal innovativeness from the students is another important issue that must be highlighted in the adoption of e-learning. Innovative people may realize the usefulness and the ease of use of new systems more quickly than non-innovative people (Schillewaert et al., 2005). So, students as the agent of change need to be more critical in choosing any tools that can improve their study achievement and students also need to be more active in their learning process.

5.2.2. Limitation of the Research

It is important to consider the limitation of reported research findings. Based on the result of this study, although the study has undertaken a fairly comprehensive review of literature, the study still identifies several limitations.

This study was designed to investigate factors influence the intention by using perceived usefulness and ease of use where perceived ease of use and perceived usefulness influence by management support. Although perhaps many

other factors influence independent variable (e.g. trust, self efficacy, perceived risks, etc), this study has limited analysis to several factors which were identified from the literature, they are: behavioral intention; management support; perceived usefulness; and perceived ease of use.

Among the limitations of this research is in the unit of analysis. The unit of analysis in this research was individual which is representing the behaviour intention of higher education students. The results are limited to those generalizations to what individual may or may not do. Using the result of this research to generalize about students' behaviour in university is therefore limited. Any generalization about how the students adopt e-learning from this study specially is still limited.

The other limitation is this research has limited sample and the area or scope of the research is only at four universities in West Sumatra those are Andalas University, Padang State University, Putra Indonesia University, and Bung Hatta University. Beside that the limitation of this research is the respondent taken from undergraduate students only. Also become the limitation of this research only uses management support, perceived usefulness, and perceived ease of use variable as antecedents of behavioral intention where there are many other variable.

5.2.3. Further Research

After identifying the limitation of the research, future research is expected to overcome the current weakness. With regarding to the limitations of the research, the current research provides suggestions for future research.

First, there are so many variables that can influence individual's intention to adopt e-learning, for example subjective norms in technology adoption. However, it has been demonstrated in the prior studies, such as Chatzoglou et al. (2010), that those factors having an influence on intention to adopt a new technology. For example, the effects on intentions from subjective norms may well subside over time with increasing peer influence (Chatzoglou et al, 2000). It is therefore recommended that further research should be undertaken to examine whether, with influence from peer, there is any influence to students' intention to adopt e-learning.

Second, this research only addressed to undergraduate students from four universities in West Sumatra, for future research it can be develop to another universities in West Sumatra with more respondent from each universities and not only taken from undergraduate students in order to get more accurate data.

Finally, although most of the additions and expansions contained within the extended TAM have been supported in this study, they have not been rigorously tested over time as stable components and influences. Thus, experimental tests for these new constructs and their relationships can be used for future research.

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APPENDIX 1

(RESEARCH QUESTIONNAIRES)

FACTORS DETERMINING STUDENTS' INTENTION TO ADOPT E-LEARNING IN HIGHER EDUCATION

Padang, June 2011

Researcher

Yulia Rahmawati

MANAGEMENT DEPARTMENT

ECONOMIC FACULTY

ANDALAS UNIVERSITY

2011

Dear respondent,

This time I'm on a research about Factors Determining Intention to Adopt E-Learning in Higher education Students at West Sumatra. This survey is voluntary and would used to scientific research to develop knowledge about human resource management. Your answers are completely confidential and will be released only as aggregates or summaries.

E-learning in this research defines as learning facilitated and supported through the utilization of information and communication technologies (ICTs) (Jenkins & Hanson, 2003). It includes use of ICT based tools (e.g. Internet, computer, telephone, e-mail, university portal, video, and others) and content created with technology (e.g. animations) to support learning activities.

I'm looking for your participation in this research. If you have already completed the survey, I thank you very much.

Padang, June 2011

Researcher,

Yulia Rahmawati

A. Respondent's Profile

Instruction: Choose the right answer by filling [√] sign at the box

1. Gender:

   ☐ Male ☐ Female

2. Major:

   ☐ S1 Bachelor Degree

   ☐ Diploma

3. Semester:

   ☐ 1 ☐ 4 ☐ 7

   ☐ 2 ☐ 5 ☐ 8

   ☐ 3 ☐ 6 ☐ Others (please explain) _____

4. Faculty:

   ☐ Economics ☐ MIPA ☐ Pharmacy

   ☐ Law ☐ Technics ☐ Medical

   ☐ Social Politics ☐ Literature ☐ Others (please explain) _____

   ☐ Agriculture ☐ Faring

5. Where were you the most often access the internet?

   ☐ College ☐ Home

   ☐ Internet cafe ☐ Others (please explain) _____

6. Internet using frequency per week:

1x	2x	3x	4x	5x	6x	7x

7. Since when you actually used the internet?

   ☐ Less than 1 year

   ☐ 1-5 years

   ☐ 6-10 years

   ☐ more than 10 years

8. Media/ Gadget to access internet

   ☐ PC

   ☐ Notebook, laptop

   ☐ Mobile phone

9. In your opinion, e-learning is:

☐ Learning activities through internet media based.

☐ Learning systems build to make the communication between students and lecturers becomes easier

☐ A learning subject about internet and intranet in a university

☐ A learning subject about electronic system

10. You use internet to:

(give number 1 to 4 based on the importance level)

☐ Academic ☐ Communication

☐ Commercial ☐ Others (please explain) _____

☐ Entertainment

11. Do you use internet in learning process?

☐ Yes ☐ No

12. If "yes", the form of internet used is:

☐ To do assignment (access from outside/inside of campus)

☐ For learning activities in the class

☐ As a complementer of class material(renew/additional referencies)

☐ Others (please explain) _____

13. Is there any subject you takes that ask the students to download the class material through internet?

☐ Yes ☐ No

14. If "Yes", how many subject of them?

☐ 1 ☐ 4

☐ 2 ☐ 5

☐ 3 ☐ Others (please explain) _____

15. Does your campus provide computer facilities that have already connected with the internet for free?

☐ Yes ☐ No

16. Does your campus provide Wi-Fi/wireless facilities?

☐ Yes ☐ No

17. If "Yes", does the students can use the wireless/Wi-Fi for free?

☐ Yes ☐ No

B. Specific Questions

Please give mark *(X)* in the available box which provide with your answer. How sure you agree or disagree with each statement.

Notes :

Strongly disagree (SD) : 1
Disagree (D) : 2
Neither agree or disagree (N) : 3
Agree (A) : 4
Strongly agree (SA) : 5

Perceived usefulness						
No		**Strongly Disagree (SD)**	**Disagree (D)**	**Neither Agree or disagree (N)**	**Agree (A)**	**Strongly Agree (SA)**
		1	**2**	**3**	**4**	**5**
1	Using e-learning in my study would enable me to accomplish tasks more quickly					
2	Using e-learning would improve my learning performance					
3	Using e-learning in my learning activity would increase my productivity					
4	Using e-learning would enhance my learning effectiveness					
5	Using e-learning would make it easier to do my assignments					
6	I would find e-learning useful in my learning activity					

Perceived Ease of Use						
No		**Strongly Disagree (SD)**	**Disagree (D)**	**Neither Agree or disagree (N)**	**Agree (A)**	**Strongly Agree (SA)**
		1	**2**	**3**	**4**	**5**
1	Learning to use e-learning would be easy for me					
2	I would find it easy to get e-learning to do what I want					
3	My interaction with e-learning would be clear & understandable					

4	I would find e-learning to be flexible to interact with					
5	It would be easy for me to become skillful at using e-learning					
6	I would find e-learning easy to use					

Management Support						
No		**Strongly Disagree (SD)**	**Disagree (D)**	**Neither Agree or disagree (N)**	**Agree (A)**	**Strongly Agree (SA)**
		1	**2**	**3**	**4**	**5**
1	The university strongly encourages the use of e-learning in learning process					
2	The use of e-learning in learning is important to the university					
3	My department is committed to a vision of using e-learning in learning process.					
4	My department is committed to support my efforts in using e-learning in learning process					

Intention to adopt e-learning						
No		**Strongly Disagree (SD)**	**Disagree (D)**	**Neither Agree or disagree (N)**	**Agree (A)**	**Strongly Agree (SA)**
		1	**2**	**3**	**4**	**5**
1	I intend to use e-learning in the next semester					
2	I predict I would use e-learning in the next semester					
3	I plan to use e-learning in the next semester.					

Thank you for your participation

APPENDIX 2

KUISIONER PENELITIAN

FAKTOR-FAKTOR YANG MEMPENGARUHI KEINGINAN MAHASISWA UNTUK MENGGUNAKAN E-LEARNING DI PERGURUAN TINGGI

Padang, Juni 2011

Peneliti

Yulia Rahmawati

MANAJEMEN INTERNASIONAL

FAKULTAS EKONOMI

UNIVERSITAS ANDALAS

2011

Responden yang terhormat,

Pada saat ini saya sedang mengadakan penelitian tentang: Faktor-Faktor yang Mempengaruhi Keinginan untuk Menggunakan E-Learning pada Mahasiswa Perguruan Tinggi di Sumatera Barat. Penelitian ini hanya untuk keperluan ilmiah, untuk pengembangan ilmu pengetahuan di bidang manajemen sumber daya manusia.

E-learning yang dimaksud dalam penelitian ini didefinisikan sebagai suatu sistem yang dapat memfasilitasi proses belajar mahasiswa dan didukung dengan penggunakan teknologi informasi dan komunikasi berbasis komputer dan internet (Jenkins & Hanson, 2003). Termasuk didalamnya penggunaan sistem informasi dan teknologi seperti internet, komputer, telepon, e-mail, portal universitas, video, dan lain-lain, serta termasuk didalamnya penggunaan teknologi (contoh: teknologi animasi) yang berguna sebagai fasilitas untuk mendukung aktivitas belajar siswa.

Saya sangat mengharapkan partisipasi anda untuk mengisi kuesioner ini dengan benar guna kelancaran penelitian ini. Atas partisipasi anda, kami ucapkan terima kasih. Semoga penelitian ini bermanfaat bagi kita semua.

Padang, Juni 2011

Peneliti,

Yulia Rahmawati

A. Profil Responden

Instruksi: Pilihlah jawaban yang paling tepat dengan memberi tanda: [√]

1. Jenis Kelamin:

   ☐ Laki-laki ☐ Perempuan

2. Jenjang Studi:

   ☐ S1

   ☐ Diploma

3. Semester:

   ☐ 1 ☐ 4 ☐ 7

   ☐ 2 ☐ 5 ☐ 8

   ☐ 3 ☐ 6 ☐ Lainnya (mohon sebutkan)__

4. Fakultas:

   ☐ Ekonomi ☐ MIPA ☐ Farmasi

   ☐ Hukum ☐ Teknik ☐ Kedokteran

   ☐ ISIP ☐ Sastra ☐ Lainnya (sebutkan)_____

   ☐ Pertanian ☐ Peternakan

5. Darimanakah anda paling sering mengakses internet?

   ☐ Kampus ☐ Rumah

   ☐ Warnet ☐ Lainnya (mohon jelaskan) _____

6. Frekuensi penggunaan internet dalam satu minggu:

1x	2x	3x	4x	5x	6x	7x

7. Sudah sejak kapan anda menggunakan akses internet?

   ☐ Kurang dari 1 tahun

   ☐ 1sampai 5 tahun

   ☐ 6 hingga 10 tahun

   ☐ Diatas 10 tahun

8. Peralatan yang paling sering digunakan untuk mengakses internet:

   ☐ PC

   ☐ Notebook, laptop

   ☐ Mobile phone

9. Menurut anda e-learning adalah:

☐ Aktivitas pembelajaran melalui media berbasis internet.

☐ Sistem perkuliahan yang dirancang sedemikian rupa sehingga mahasiswa dapat berkomunikasi lebih mudah dengan dosen.

☐ Pelajaran mengenai sistem internet dan intranet di suatu universitas

☐ Pelajaran mengenai sistem kerja alat-alat elektronik

10. Anda menggunakan internet untuk:

(*beri nomor 1-4 dan urutkan menurut tingkat kepentingan*)

☐ Akademik ☐ Komunikasi

☐ Komersil ☐ Lainnya (mohon jelaskan) _____

☐ Hiburan

11. Apakah anda menggunakan internet untuk proses pembelajaran?

☐ Ya ☐ Tidak

12. Jika "Ya", bentuk penggunaannya adalah:

☐ Untuk mengerjakan tugas (diakses di luar/di dalam kampus)

☐ Untuk proses belajar di kelas

☐ Sebagai pelengkap materi kuliah(memperbarui/menambah referensi)

☐ Lainnya (mohon jelaskan) _____

13. Apakah ada mata kuliah anda yang mengharuskan mahasiswanya mendownload/ mengunduh bahan pelajaran melalui internet?

☐ Ya ☐ Tidak

14. Jika "Ya", ada berapa mata kuliah yang mengharuskan mahasiswa mengunduh materi pelajaran dari internet?

☐ 1 ☐ 4

☐ 2 ☐ 5

☐ 3 ☐ Lainnya (mohon jelaskan) _____

15. Apakah kampus anda menyediakan fasilitas komputer yang telah terhubung dengan jaringan internet secara cuma-cuma?

☐ Ya ☐ Tidak

16. Apakah kampus anda menyediakan fasilitas Wi-Fi/ wireless?

☐ Ya ☐ Tidak

17. Jika "Ya", apakah mahasiswa dapat dengan bebas menggunakan fasilitas Wi-Fi/wireless tersebut?

☐ Ya ☐ Tidak

B. Pertanyaan Spesifik

Berikan tanda silang (X) pada satu dari pilihan jawaban yang tersedia

Keterangan :

Sangat Tidak Setuju (STS) : 1
Tidak Setuju (TS) : 2
Netral (N) : 3
Setuju (S) : 4
Sangat Setuju (SS) : 5

Persepsi atas kegunaan e-learning						
No		**Sangat Tidak Setuju (STS)**	**Tidak Setuju (TS)**	**Netral (N)**	**Setuju (S)**	**Sangat Setuju (SS)**
		1	**2**	**3**	**4**	**5**
1	Penggunaan e-learning dalam kegiatan belajar akan membantu saya menyelesaikan tugas-tugas lebih cepat					
2	Penggunaan e-learning akan berpengaruh terhadap peningkatan hasil belajar saya					
3	Penggunaan e-learning akan meningkatkan produktivitas saya dalam belajar					
4	Penggunaan e-learning akan meningkatkan efektivitas belajar saya					
5	Penggunaan e-learning akan mempermudah pengerjaan tugas-tugas kuliah saya					
6	E-learning bermanfaat dalam kegiatan belajar saya					
Persepsi atas kemudahan penggunaan e-learning						
No		**Sangat Tidak Setuju (STS)**	**Tidak Setuju (TS)**	**Netral (N)**	**Setuju (S)**	**Sangat Setuju (SS)**
		1	**2**	**3**	**4**	**5**
1	Penggunaan e-learning mudah dipelajari					
2	Mudah bagi saya menemukan hal-hal yang saya cari dengan e-learning					

3	Interaksi saya dengan e-learning jelas dan dapat dipahami					
4	Saya menemukan penggunaan e-learning dapat disesuaikan dengan kebutuhan belajar saya					
5	Mudah bagi saya untuk mengerti cara memanfaatkan e-learning					
6	Saya menemukan bahwa e-learning mudah digunakan					
Dukungan dari manajemen universitas						
No		**Sangat Tidak Setuju (STS)**	**Tidak Setuju (TS)**	**Netral (N)**	**Setuju (S)**	**Sangat Setuju (SS)**
		1	**2**	**3**	**4**	**5**
1	Pihak universitas member dukungan yang besar terhadap penggunaan e-learning dalam proses belajar					
2	Penggunaan e-learning dalam proses belajar penting bagi universitas					
3	Jurusan saya berkomitmen meningkatkan penggunaan e-learning dalam proses belajar					
4	Pihak jurusan berkomitmen untuk mendukung usaha-usaha saya menggunakan e-learning dalam proses belajar					
Keinginan untuk memanfaatkan e-learning						
No		**Sangat Tidak Setuju (STS)**	**Tidak Setuju (TS)**	**Netral (N)**	**Setuju (S)**	**Sangat Setuju (SS)**
		1	**2**	**3**	**4**	**5**
1	Saya berniat menggunakan e-learning pada semester depan					
2	Saya memprediksi saya akan menggunakan e-learning pada semester depan					
3	Saya berencana menggunakan e-learning pada semester depan					

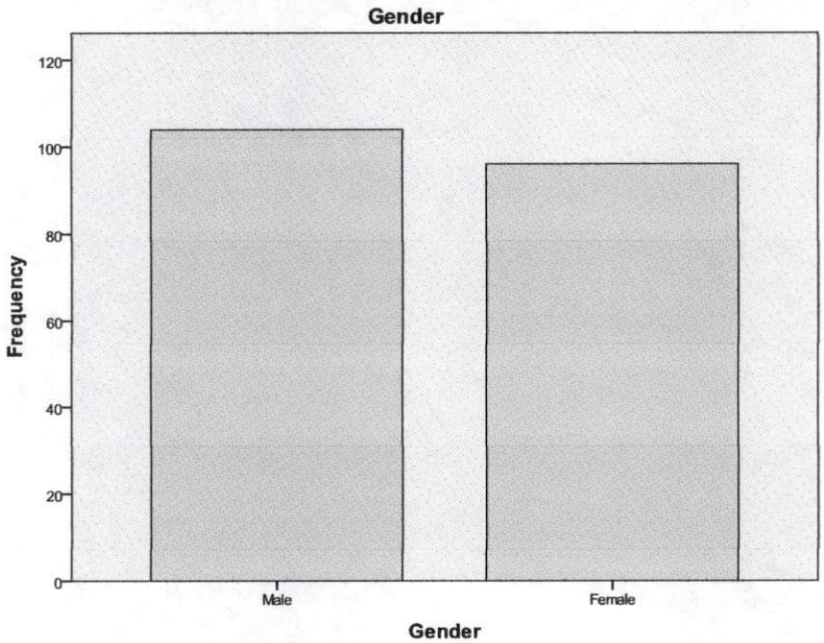
Terimakasih atas partisipasi saudara/i dalam pengisian kuesioner ini. Semoga penelitian ini dapat berguna kedepannya bagi berbagai pihak.

APPENDIX 3

FREQUENCY OF RESPONDENT CHARACTERISTICS

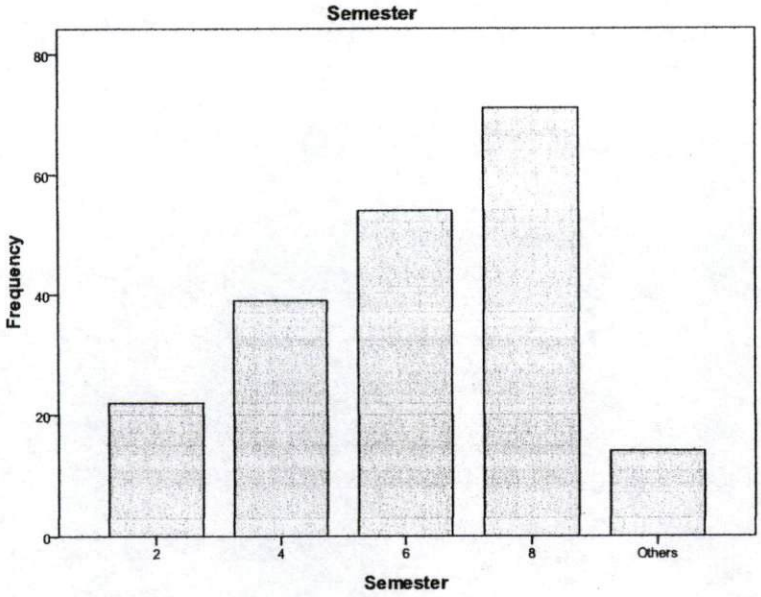
Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	104	52.0	52.0	52.0
	Female	96	48.0	48.0	100.0
	Total	200	100.0	100.0	



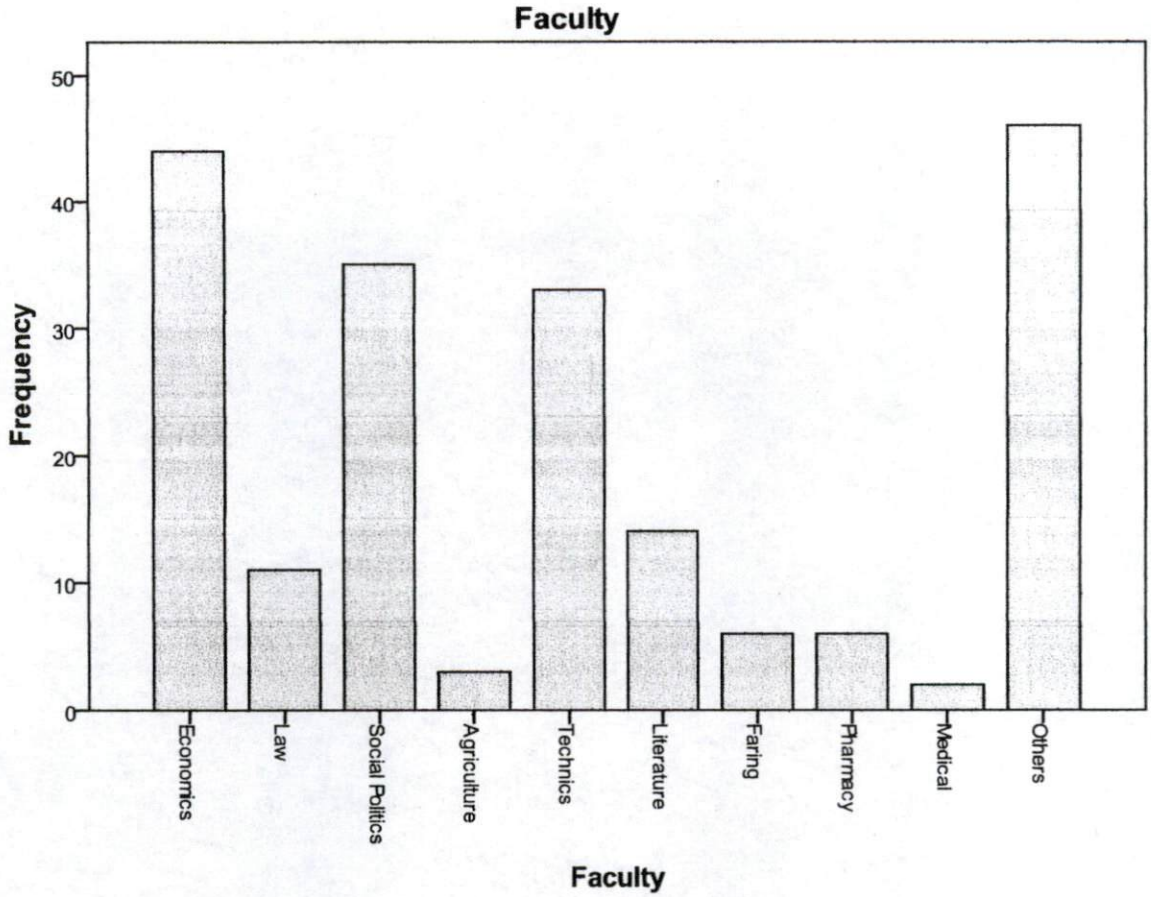
Semester

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	22	11.0	11.0	11.0
	4	39	19.5	19.5	30.5
	6	54	27.0	27.0	57.5
	8	71	35.5	35.5	93.0
	Others	14	7.0	7.0	100.0
	Total	200	100.0	100.0	



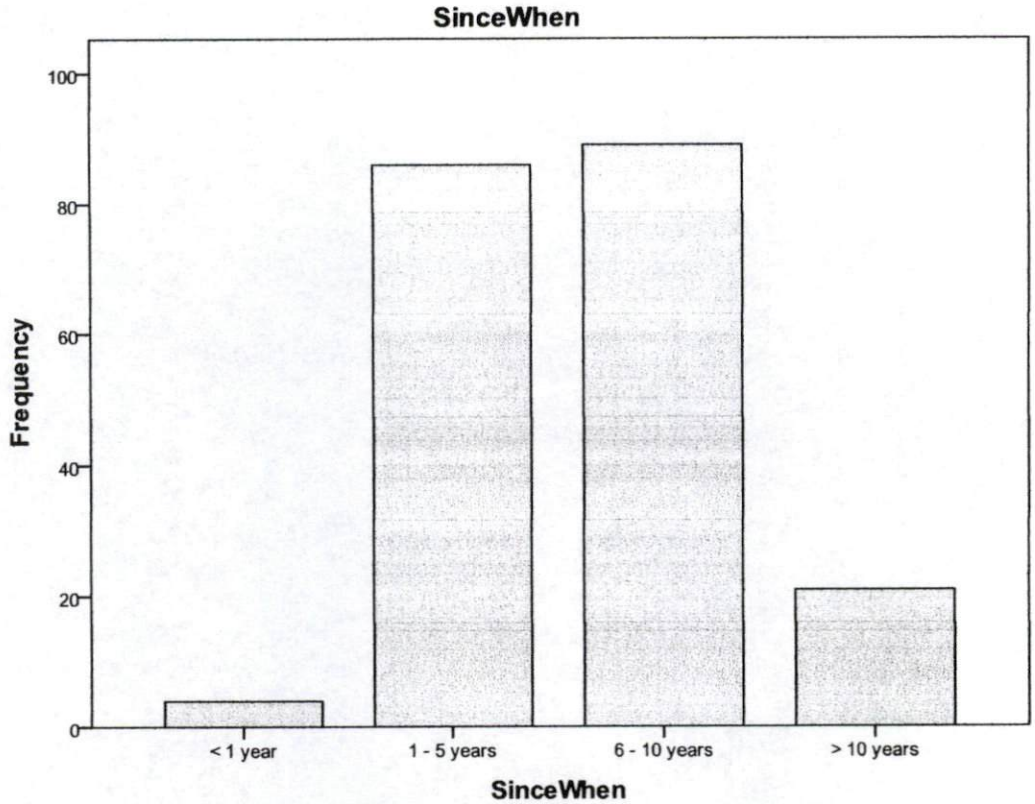
Faculty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economics	44	22.0	22.0	22.0
	Law	11	5.5	5.5	27.5
	Social Politics	35	17.5	17.5	45.0
	Agriculture	3	1.5	1.5	46.5
	Technics	33	16.5	16.5	63.0
	Literature	14	7.0	7.0	70.0
	Faring	6	3.0	3.0	73.0
	Pharmacy	6	3.0	3.0	76.0
	Medical	2	1.0	1.0	77.0
	Others	46	23.0	23.0	100.0
	Total	200	100.0	100.0	



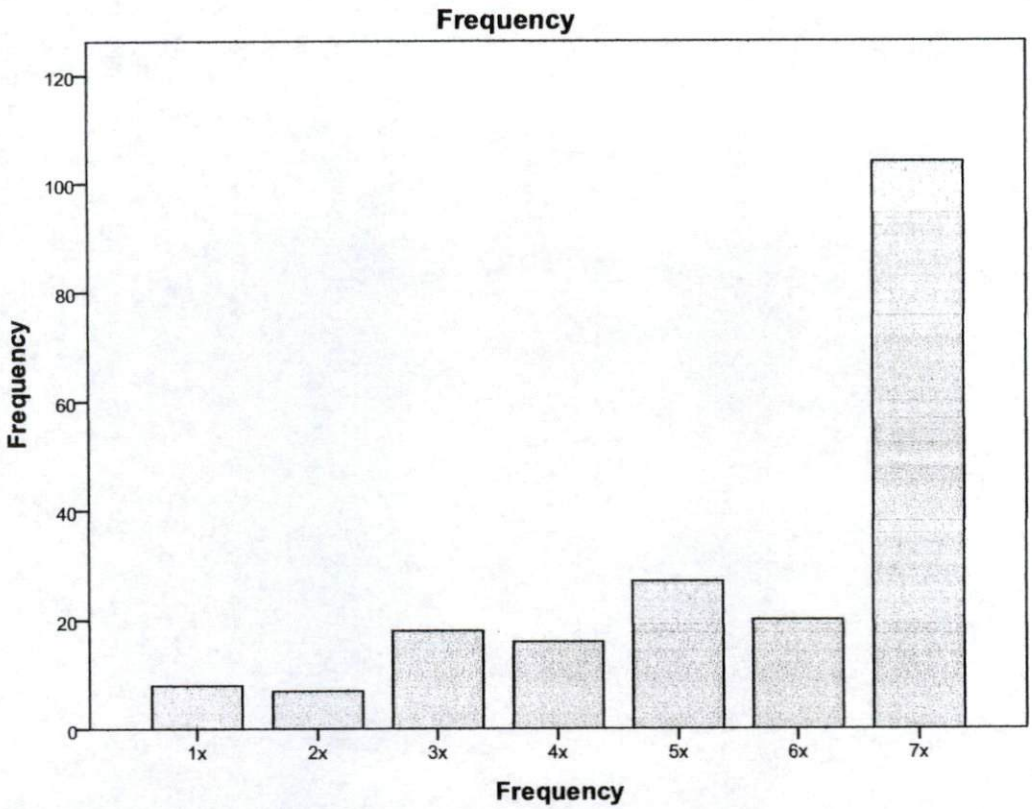
SinceWhen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1 year	4	2.0	2.0	2.0
	1 - 5 years	86	43.0	43.0	45.0
	6 - 10 years	89	44.5	44.5	89.5
	> 10 years	21	10.5	10.5	100.0
	Total	200	100.0	100.0	



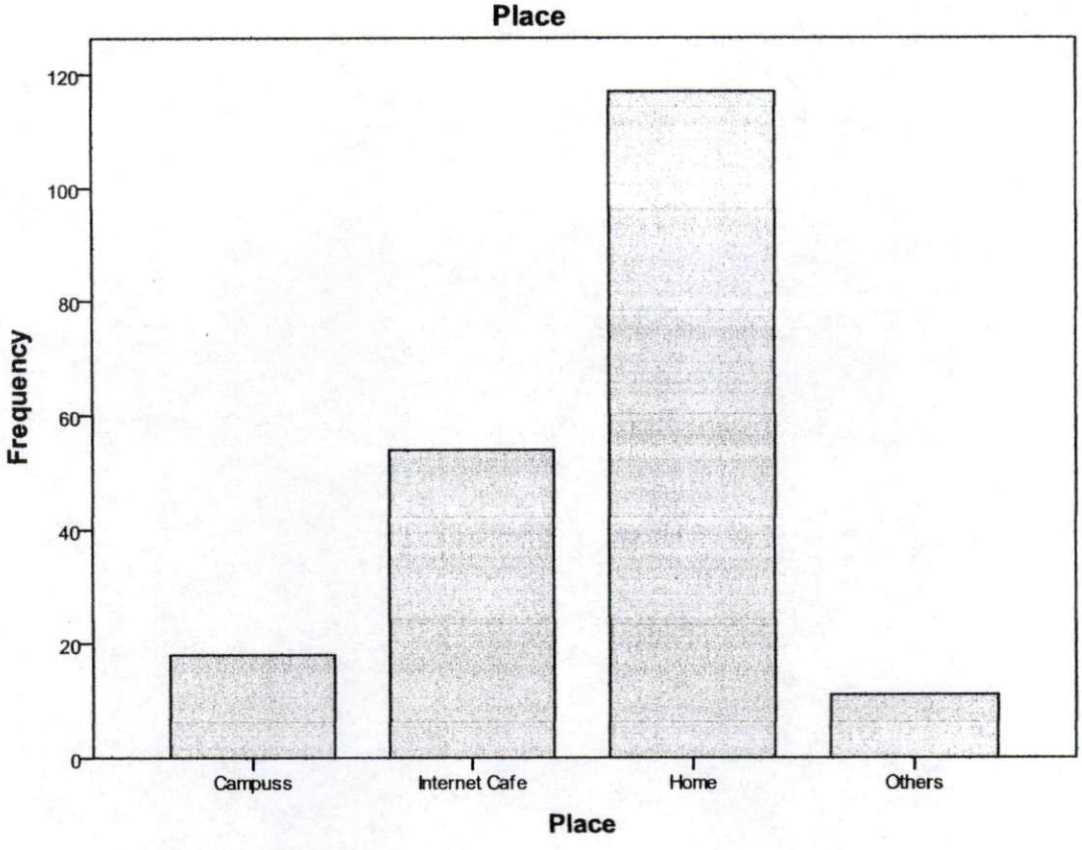
Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1x	8	4.0	4.0	4.0
	2x	7	3.5	3.5	7.5
	3x	18	9.0	9.0	16.5
	4x	16	8.0	8.0	24.5
	5x	27	13.5	13.5	38.0
	6x	20	10.0	10.0	48.0
	7x	104	52.0	52.0	100.0
	Total	200	100.0	100.0	



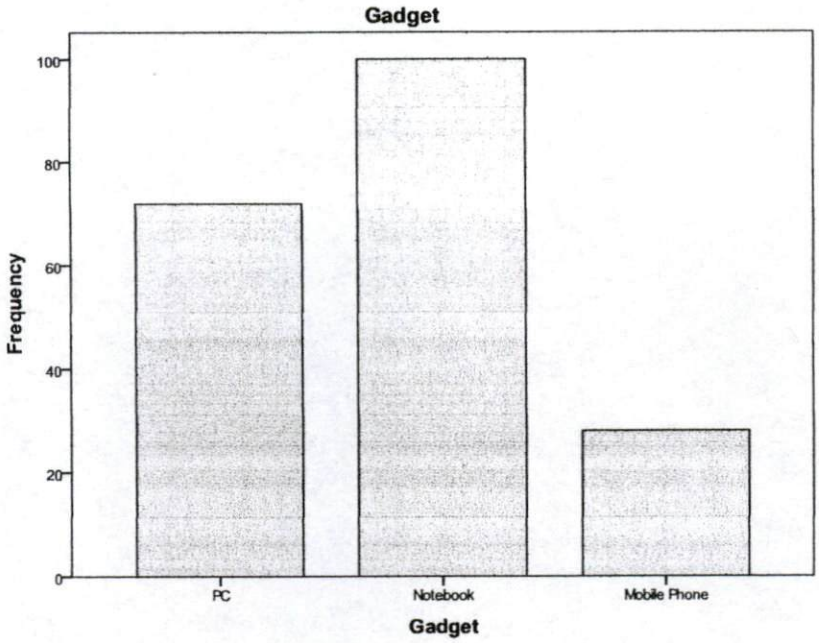
Place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Campuss	18	9.0	9.0	9.0
	Internet Cafe	54	27.0	27.0	36.0
	Home	117	58.5	58.5	94.5
	Others	11	5.5	5.5	100.0
	Total	200	100.0	100.0	



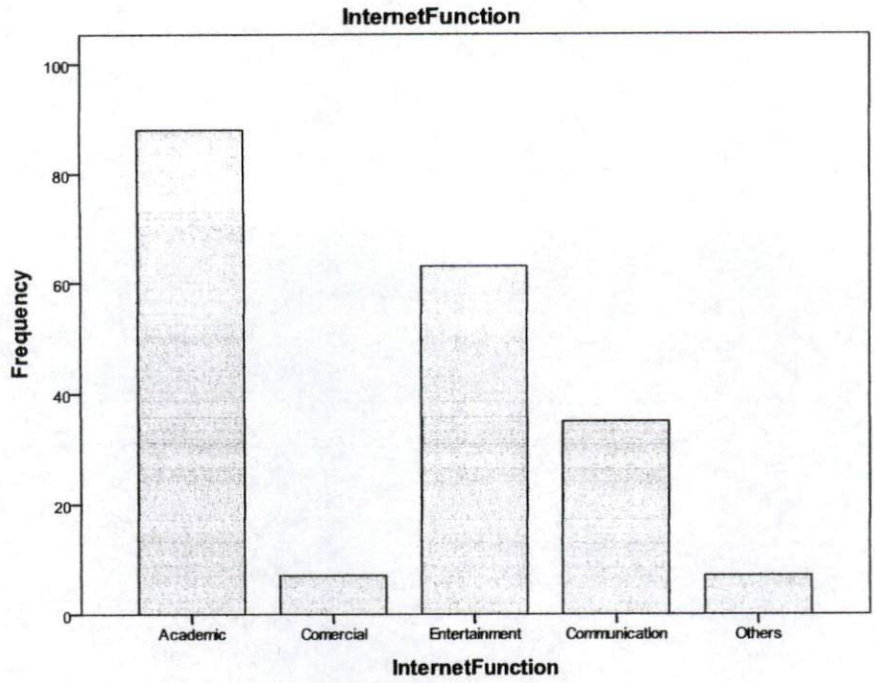
Gadget

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PC	72	36.0	36.0	36.0
	Notebook	100	50.0	50.0	86.0
	Mobile Phone	28	14.0	14.0	100.0
	Total	200	100.0	100.0	



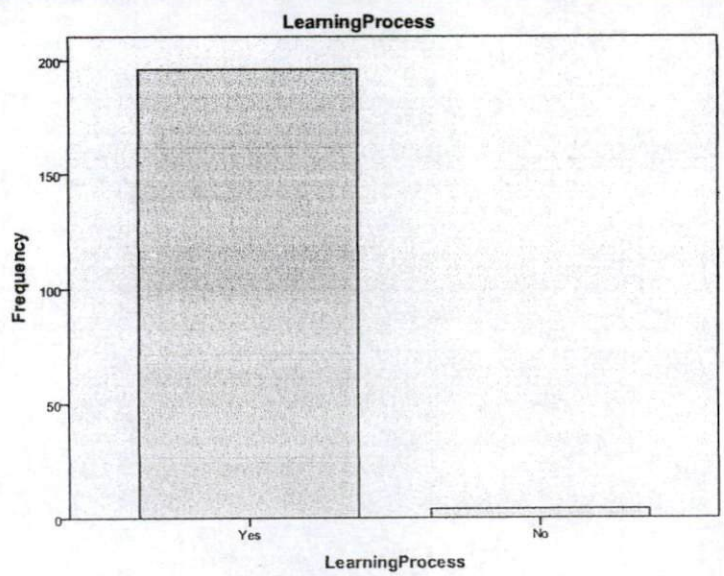
InternetFunction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Academic	88	44.0	44.0	44.0
	Comercial	7	3.5	3.5	47.5
	Entertainment	63	31.5	31.5	79.0
	Communication	35	17.5	17.5	96.5
	Others	7	3.5	3.5	100.0
	Total	200	100.0	100.0	



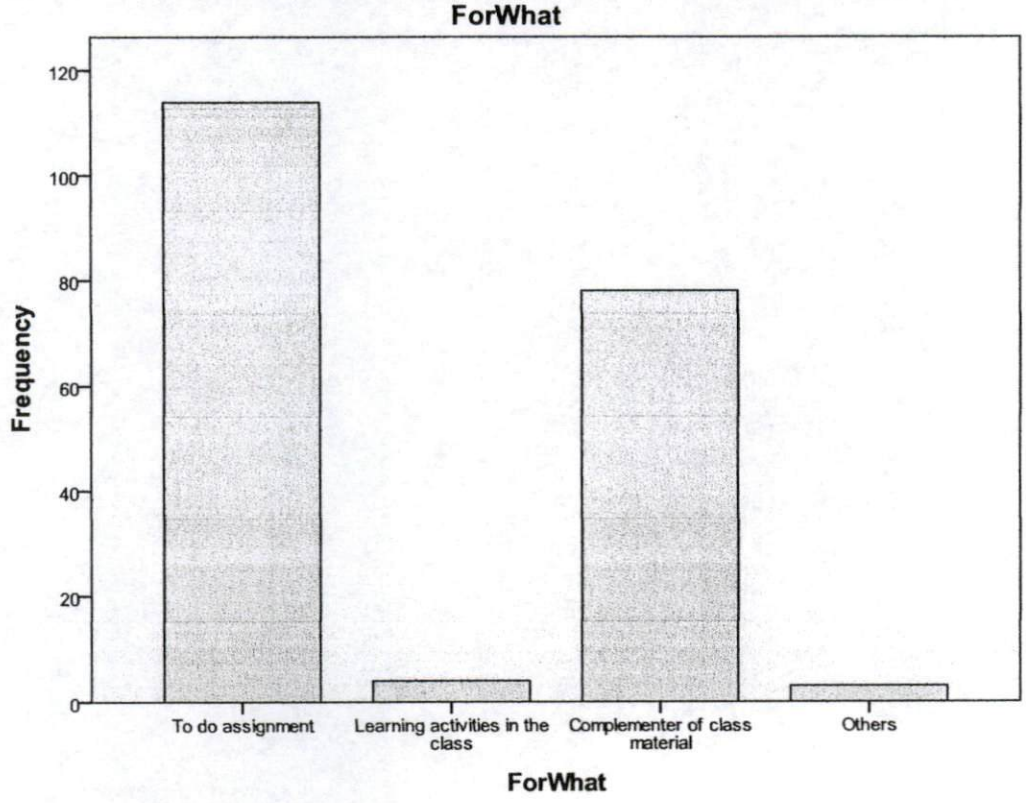
LearningProcess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	196	98.0	98.0	98.0
	No	4	2.0	2.0	100.0
	Total	200	100.0	100.0	



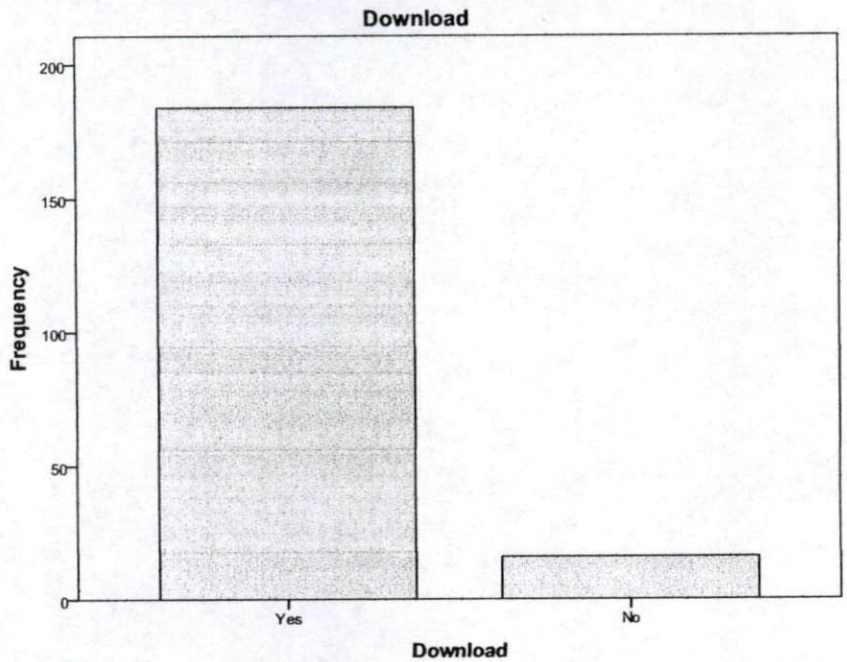
ForWhat

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To do assignment	114	57.0	57.3	57.3
	Learning activities in the class	4	2.0	2.0	59.3
	Complementer of class material	78	39.0	39.2	98.5
	Others	3	1.5	1.5	100.0
	Total	199	99.5	100.0	
Missing	System	1	.5		
Total		200	100.0		



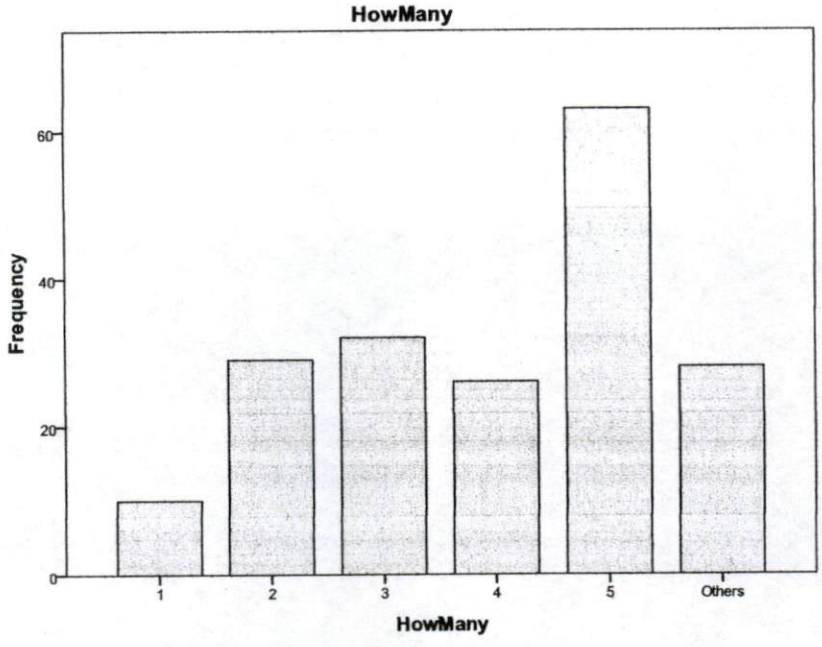
Download

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	184	92.0	92.0	92.0
	No	16	8.0	8.0	100.0
	Total	200	100.0	100.0	



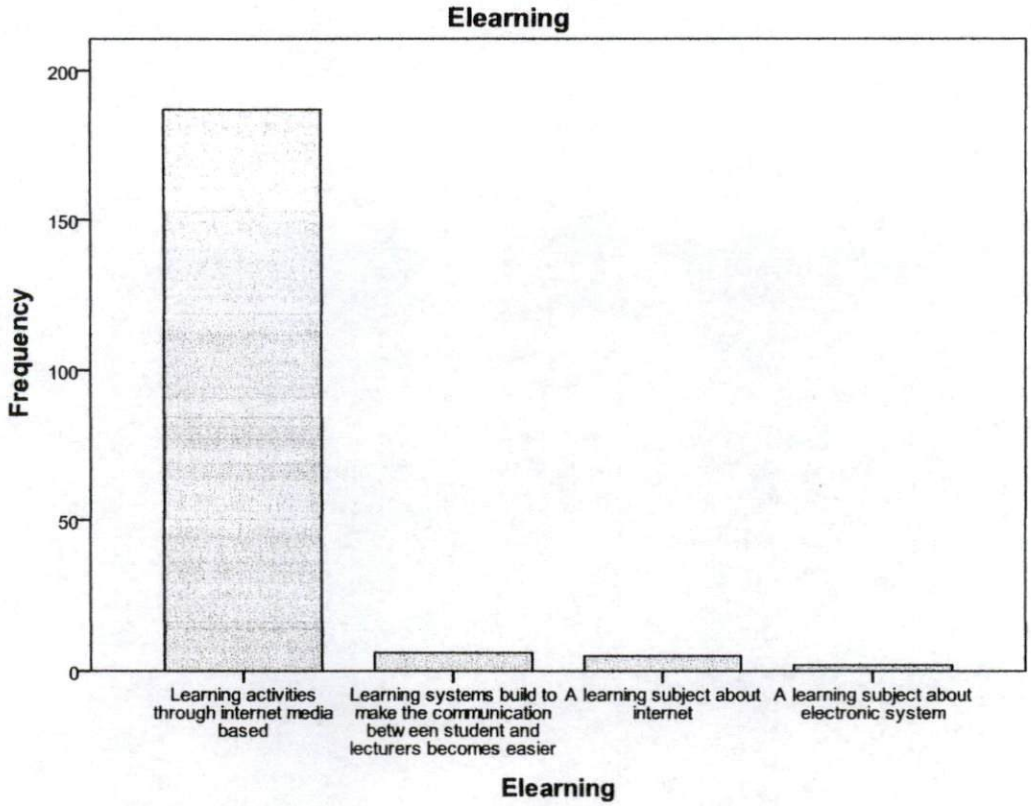
HowMany

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	5.0	5.3	5.3
	2	29	14.5	15.4	20.7
	3	32	16.0	17.0	37.8
	4	26	13.0	13.8	51.6
	5	63	31.5	33.5	85.1
	Others	28	14.0	14.9	100.0
	Total	188	94.0	100.0	
Missing	System	12	6.0		
Total		200	100.0		



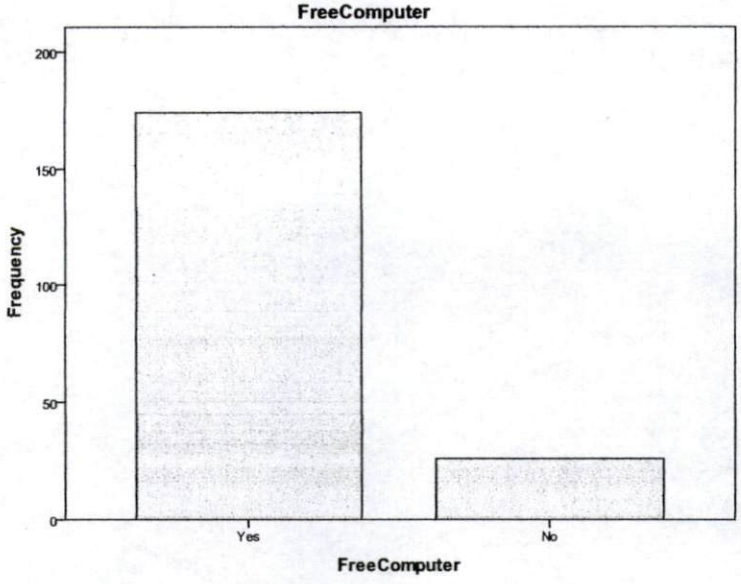
Elearning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Learning activities through internet media based	187	93.5	93.5	93.5
	Learning systems build to make the communication between students and lecturers becomes easier	6	3.0	3.0	96.5
	A learning subject about internet	5	2.5	2.5	99.0
	A learning subject about electronic system	2	1.0	1.0	100.0
	Total	200	100.0	100.0	



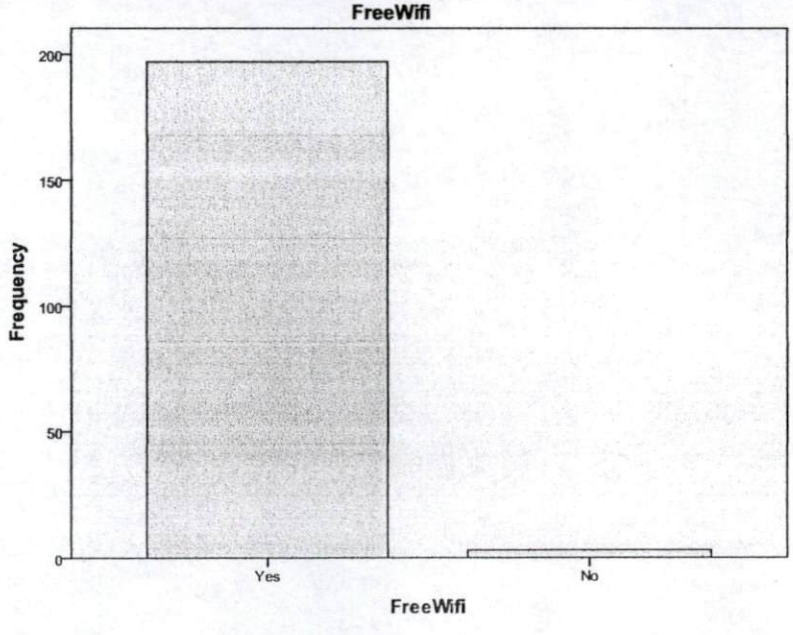
FreeComputer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	174	87.0	87.0	87.0
	No	26	13.0	13.0	100.0
	Total	200	100.0	100.0	



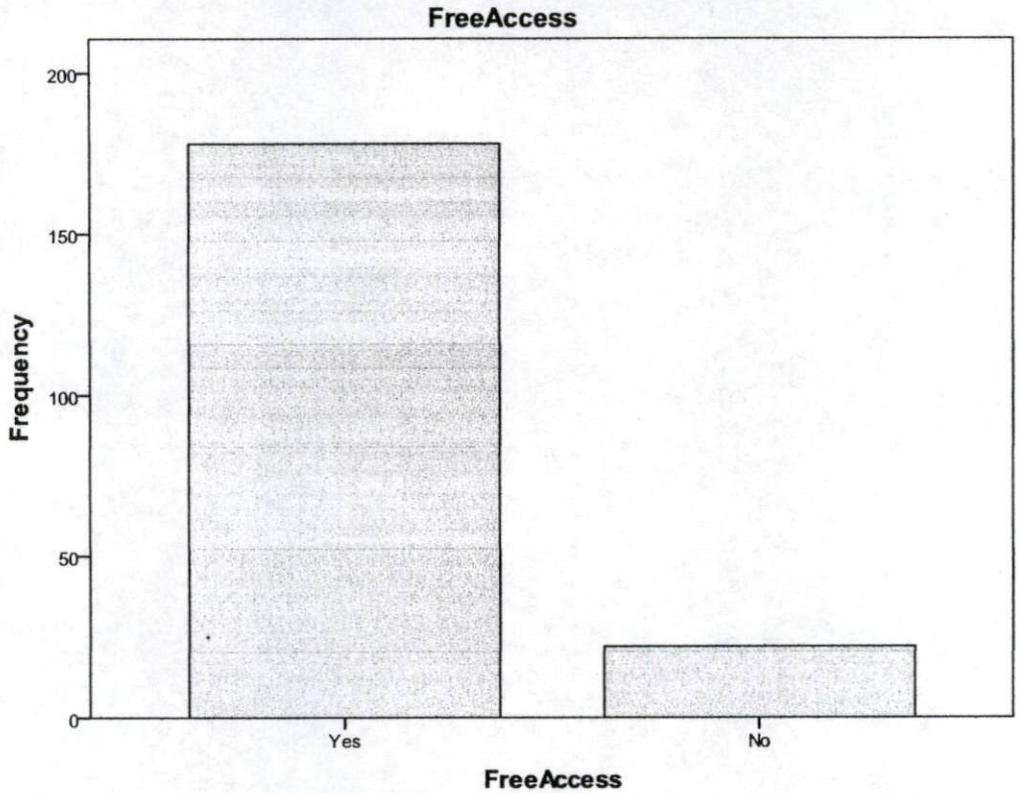
FreeWi-Fi

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	197	98.5	98.5	98.5
	No	3	1.5	1.5	100.0
	Total	200	100.0	100.0	



FreeAccess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	178	89.0	89.0	89.0
	No	22	11.0	11.0	100.0
	Total	200	100.0	100.0	



APPENDIX 4

MEANS

PERCEIVED USEFULNESS

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
PU1	200	100.0%	0	.0%	200	100.0%
PU2	200	100.0%	0	.0%	200	100.0%
PU3	200	100.0%	0	.0%	200	100.0%
PU4	200	100.0%	0	.0%	200	100.0%
PU5	200	100.0%	0	.0%	200	100.0%
PU6	200	100.0%	0	.0%	200	100.0%

Report

	PU1	PU2	PU3	PU4	PU5	PU6
Mean	4.1200	3.9750	3.9350	4.0150	4.1250	4.1700
N	200	200	200	200	200	200
Std. Deviation	.55420	.53461	.58522	.63782	.60929	.58550

PERCEIVED EASE OF USE

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
PEOU1	200	100.0%	0	.0%	200	100.0%
PEOU2	200	100.0%	0	.0%	200	100.0%
PEOU3	200	100.0%	0	.0%	200	100.0%
PEOU4	200	100.0%	0	.0%	200	100.0%
PEOU5	200	100.0%	0	.0%	200	100.0%
PEOU6	200	100.0%	0	.0%	200	100.0%

Report

	PEOU1	PEOU2	PEOU3	PEOU4	PEOU5	PEOU6
Mean	3.8900	4.0000	3.8450	3.8500	3.8550	3.8650
N	200	200	200	200	200	200
Std. Deviation	.46797	.44834	.55905	.50872	.57062	.59035

MANAGEMENT SUPPORT

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
MS1	200	100.0%	0	.0%	200	100.0%
MS2	200	100.0%	0	.0%	200	100.0%
MS3	200	100.0%	0	.0%	200	100.0%
MS4	200	100.0%	0	.0%	200	100.0%

Report

	MS1	MS2	MS3	MS4
Mean	3.6200	3.6400	3.6550	3.6450
N	200	200	200	200
Std. Deviation	.66921	.66529	.57237	.59222

INTENTION

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
I1	200	100.0%	0	.0%	200	100.0%
I2	200	100.0%	0	.0%	200	100.0%
I3	200	100.0%	0	.0%	200	100.0%

Report

	I1	I2	I3
Mean	4.0600	4.2450	4.0750
N	200	200	200
Std. Deviation	.56391	.63005	.66452

APPENDIX 5

VALIDITY TESTING

PERCEIVED USEFULNESS

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.834
Bartlett's Test of Sphericity	Approx. Chi-Square	407.708
	Df	15
	Sig.	.000

Communalities

	Initial	Extraction
PU1	1.000	.415
PU2	1.000	.616
PU3	1.000	.573
PU4	1.000	.635
PU5	1.000	.502
PU6	1.000	.540

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.283	54.714	54.714	3.283	54.714	54.714
2	.770	12.828	67.542			
3	.690	11.504	79.045			
4	.476	7.935	86.980			
5	.434	7.227	94.207			
6	.348	5.793	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
PU1	.645
PU2	.785
PU3	.757
PU4	.797
PU5	.709
PU6	.735

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

PERCEIVED EASE OF USE

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.873
Bartlett's Test of Sphericity	Approx. Chi-Square	534.320
	Df	15
	Sig.	.000

Communalities

	Initial	Extraction
PEOU1	1.000	.638
PEOU2	1.000	.485
PEOU3	1.000	.721
PEOU4	1.000	.586
PEOU5	1.000	.618
PEOU6	1.000	.617

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.666	61.108	61.108	3.666	61.108	61.108
2	.706	11.769	72.877			
3	.499	8.315	81.192			
4	.429	7.155	88.348			
5	.412	6.862	95.210			
6	.287	4.790	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
PEOU1	.799
PEOU2	.697
PEOU3	.849
PEOU4	.766
PEOU5	.786
PEOU6	.786

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

MANAGEMENT SUPPORT

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.647
Bartlett's Test of Sphericity	Approx. Chi-Square	204.415
	Df	6
	Sig.	.000

Communalities

	Initial	Extraction
MS1	1.000	.402
MS2	1.000	.404
MS3	1.000	.746
MS4	1.000	.644

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.195	54.887	54.887	2.195	54.887	54.887
2	.866	21.639	76.525			
3	.654	16.357	92.882			
4	.285	7.118	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
MS1	.634
MS2	.635
MS3	.864
MS4	.802

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

INTENTION TO ADOPT E-LEARNING

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.703
Bartlett's Test of Sphericity	Approx. Chi-Square	172.535
	Df	3
	Sig.	.000

Communalities

	Initial	Extraction
I1	1.000	.711
I2	1.000	.669
I3	1.000	.727

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.107	70.229	70.229	2.107	70.229	70.229
2	.486	16.210	86.438			
3	.407	13.562	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
I1	.843
I2	.818
I3	.853

Extraction Method: Principal Component Analysis.

APPENDIX 6

RELIABILITY TESTING

PERCEIVED USEFULNESS

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded[a]	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.833	.833	6

Inter-Item Correlation Matrix

	PU1	PU2	PU3	PU4	PU5	PU6
PU1	1.000	.485	.396	.350	.402	.308
PU2	.485	1.000	.573	.561	.364	.463
PU3	.396	.573	1.000	.541	.375	.443
PU4	.350	.561	.541	1.000	.512	.518
PU5	.402	.364	.375	.512	1.000	.518
PU6	.308	.463	.443	.518	.518	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PU1	20.2200	5.147	.502	.304	.825
PU2	20.3650	4.876	.659	.486	.796
PU3	20.4050	4.785	.621	.422	.802
PU4	20.3250	4.492	.673	.483	.791
PU5	20.2150	4.803	.578	.390	.811
PU6	20.1700	4.825	.603	.396	.806

PERCEIVED EASE OF USE

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded[a]	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.871	.872	6

Inter-Item Correlation Matrix

	PEOU1	PEOU2	PEOU3	PEOU4	PEOU5	PEOU6
PEOU1	1.000	.575	.645	.521	.486	.510
PEOU2	.575	1.000	.501	.419	.412	.418
PEOU3	.645	.501	1.000	.536	.622	.637
PEOU4	.521	.419	.536	1.000	.583	.535
PEOU5	.486	.412	.622	.583	1.000	.568
PEOU6	.510	.418	.637	.535	.568	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PEOU1	19.4150	4.485	.690	.526	.847
PEOU2	19.3050	4.756	.571	.373	.865
PEOU3	19.4600	4.049	.761	.600	.832
PEOU4	19.4550	4.410	.657	.447	.851
PEOU5	19.4500	4.158	.683	.496	.847
PEOU6	19.4400	4.097	.681	.484	.848

MANAGEMENT SUPPORT

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded[a]	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.710	.719	4

Inter-Item Correlation Matrix

	MS1	MS2	MS3	MS4
MS1	1.000	.346	.364	.279
MS2	.346	1.000	.372	.273
MS3	.364	.372	1.000	.704
MS4	.279	.273	.704	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MS1	10.9400	2.097	.417	.185	.698
MS2	10.9200	2.104	.418	.189	.697
MS3	10.9050	1.986	.644	.546	.563
MS4	10.9150	2.088	.534	.497	.625

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded[a]	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.785	.788	3

Inter-Item Correlation Matrix

	I1	I2	I3
I1	1.000	.524	.591
I2	.524	1.000	.544
I3	.591	.544	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I1	8.3200	1.294	.636	.408	.704
I2	8.1350	1.203	.599	.359	.737
I3	8.3050	1.087	.648	.425	.685

APPENDIX 7

NORMALITY TESTING

Assessment of normality (Group number 1)

Variable	min	max	skew	c.r.	kurtosis	c.r.
PU1	3.000	5.000	.049	.282	.099	.286
PU2	3.000	5.000	-.024	-.139	.506	1.462
PU6	3.000	5.000	-.045	-.257	-.284	-.819
PU5	3.000	5.000	-.069	-.398	-.377	-1.089
PU4	3.000	5.000	-.012	-.072	-.530	-1.531
PU3	3.000	5.000	.009	.050	-.100	-.288
I1	3.000	5.000	.016	.092	.121	.350
I3	2.000	5.000	-.186	-1.076	-.377	-1.088
I2	3.000	5.000	-.242	-1.396	-.641	-1.851
PEOU1	3.000	5.000	-.361	-2.087	1.167	3.369
PEOU2	3.000	5.000	.000	.000	2.000	5.774
PEOU6	2.000	5.000	-.402	-2.321	.845	2.440
PEOU5	3.000	5.000	-.006	-.032	-.112	-.324
PEOU4	3.000	5.000	-.235	-1.359	.413	1.191
PEOU3	2.000	5.000	-.211	-1.221	.380	1.097
MS1	2.000	5.000	-.394	-2.274	.047	.136
MS4	2.000	5.000	-.139	-.801	-.252	-.728
MS3	2.000	5.000	-.304	-1.754	-.177	-.510
MS2	1.000	5.000	-.061	-.350	.430	1.241
Multivariate					98.734	24.715

SEM AMOS

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	190
Number of distinct parameters to be estimated:	43
Degrees of freedom (190 - 43):	147

Result (Default model)

Minimum was achieved

Chi-square = 277.127

Degrees of freedom = 147

Probability level = .000

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	43	277.127	147	.000	1.885
Saturated model	190	.000	0		
Independence model	19	1730.111	171	.000	10.118

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.022	.865	.826	.669
Saturated model	.000	1.000		
Independence model	.105	.325	.250	.292

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.840	.814	.918	.903	.917
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.860	.722	.788
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	130.127	87.046	181.026
Saturated model	.000	.000	.000
Independence model	1559.111	1429.367	1696.271

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1.393	.654	.437	.910
Saturated model	.000	.000	.000	.000
Independence model	8.694	7.835	7.183	8.524

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.067	.055	.079	.013
Independence model	.214	.205	.223	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	363.127	372.736	504.955	547.955
Saturated model	380.000	422.458	1006.680	1196.680
Independence model	1768.111	1772.356	1830.779	1849.779

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	1.825	1.608	2.081	1.873
Saturated model	1.910	1.910	1.910	2.123
Independence model	8.885	8.233	9.574	8.906

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	127	137
Independence model	24	25

Estimates (Group number 1 - Default model)
Scalar Estimates (Group number 1 - Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Perceived Ease of Use	<---	Management Support	.504	.136	3.696	***	par_1
Perceived Usefulness	<---	Management Support	.022	.081	.276	.782	par_2
Perceived Usefulness	<---	Perceived Ease of Use	.562	.095	5.939	***	par_5
Intention to Adopt E-learning	<---	Perceived Ease of Use	.231	.129	1.787	.074	par_3
Intention to Adopt E-learning	<---	Perceived Usefulness	.731	.189	3.859	***	par_4
MS2	<---	Management Support	1.013	.238	4.262	***	par_6
MS3	<---	Management Support	1.859	.343	5.420	***	par_7
MS4	<---	Management Support	1.687	.313	5.393	***	par_8
MS1	<---	Management Support	1.000				
PEOU3	<---	Perceived Ease of Use	1.272	.108	11.769	***	par_9
PEOU4	<---	Perceived Ease of Use	1.006	.101	9.945	***	par_10
PEOU5	<---	Perceived Ease of Use	1.157	.115	10.069	***	par_11
PEOU6	<---	Perceived Ease of Use	1.191	.118	10.101	***	par_12
PEOU2	<---	Perceived Ease of Use	.781	.088	8.913	***	par_13
PEOU1	<---	Perceived Ease of Use	1.000				
I2	<---	Intention to Adopt E-learning	1.104	.127	8.687	***	par_14
I3	<---	Intention to Adopt E-learning	1.235	.131	9.400	***	par_15
I1	<---	Intention to Adopt E-learning	1.000				
PU3	<---	Perceived Usefulness	1.398	.203	6.873	***	par_16
PU4	<---	Perceived Usefulness	1.643	.234	7.032	***	par_17
PU5	<---	Perceived Usefulness	1.323	.203	6.502	***	par_18
PU6	<---	Perceived Usefulness	1.374	.205	6.688	***	par_19
PU2	<---	Perceived Usefulness	1.295	.184	7.019	***	par_20
PU1	<---	Perceived Usefulness	1.000				

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Perceived Ease of Use	<---	Management Support	.385
Perceived Usefulness	<---	Management Support	.021
Perceived Usefulness	<---	Perceived Ease of Use	.686
Intention to Adopt E-learning	<---	Perceived Ease of Use	.200
Intention to Adopt E-learning	<---	Perceived Usefulness	.520
MS2	<---	Management Support	.418
MS3	<---	Management Support	.892
MS4	<---	Management Support	.782
MS1	<---	Management Support	.410
PEOU3	<---	Perceived Ease of Use	.818
PEOU4	<---	Perceived Ease of Use	.711
PEOU5	<---	Perceived Ease of Use	.729
PEOU6	<---	Perceived Ease of Use	.726
PEOU2	<---	Perceived Ease of Use	.627
PEOU1	<---	Perceived Ease of Use	.768
I2	<---	Intention to Adopt E-learning	.727
I3	<---	Intention to Adopt E-learning	.771
I1	<---	Intention to Adopt E-learning	.736
PU3	<---	Perceived Usefulness	.704
PU4	<---	Perceived Usefulness	.759
PU5	<---	Perceived Usefulness	.640
PU6	<---	Perceived Usefulness	.692
PU2	<---	Perceived Usefulness	.714
PU1	<---	Perceived Usefulness	.532

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Management Support	.075	.027	2.793	.005	par_21
E20	.110	.018	5.944	***	par_22
E22	.045	.013	3.517	***	par_23
E21	.093	.020	4.648	***	par_24
E1	.371	.039	9.612	***	par_25
E2	.363	.038	9.593	***	par_26
E3	.067	.023	2.863	.004	par_27

	Estimate	S.E.	C.R.	P	Label
E4	.135	.022	6.030	***	par_28
E5	.089	.011	8.060	***	par_29
E6	.121	.013	9.150	***	par_30
E7	.103	.014	7.417	***	par_31
E8	.127	.015	8.654	***	par_32
E9	.152	.018	8.498	***	par_33
E10	.164	.019	8.565	***	par_34
E11	.145	.020	7.187	***	par_35
E12	.186	.026	7.203	***	par_36
E13	.178	.028	6.453	***	par_37
E14	.178	.021	8.469	***	par_38
E15	.218	.025	8.807	***	par_39
E16	.171	.022	7.820	***	par_40
E17	.172	.021	8.376	***	par_41
E18	.139	.017	8.202	***	par_42
E19	.219	.024	9.321	***	par_43

Standardized Estimates