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Rogers' Five Main Attributes of Innovation on the Adoption Rate of Online Learning

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understanding of the challenges and potential of online education in the local and global communities.

Abstract

This research project investigated the influence of Roger's five attributes of innovation on the adoption rates of online education by students and faculty members in the College of Professional Studies at Hawaii Pacific University. Previous research was collected in a comprehensive literature review. A survey distributed to graduate students and faculty members was used to gather data in regards to their perception of online education. The results of the research did not support the hypotheses. The implications resulted in a better understanding of how both stakeholders perceived this educational innovation.

Chapter One – Introduction

Importance of Research Area

Introduction. Every since 1995, Hawaii Pacific University (HPU), like many other post-secondary educational institutions across the country, has been integrating the online education component to its degree programs. A few years ago, HPU began to offer the Master of Arts in Organizational Change entirely online. Recently, it has offered prospective students the opportunity to pursue the business degree at the undergraduate level entirely online. There are various reasons for the increased offering of online education at this school.

Three groups of stakeholder who have been creating the growth in online education are: school administrators, faculty members, and students. School administrators have been pushing for more online courses to reduce overhead costs that associated with rent, utility, insurance and janitorial services, etc. The national average instructor to student ratio was 20-to-1 per class, and this ratio was enforced by the limitation of a classroom size, faculty resistance to grading larger numbers of tests and papers, and the desire for smaller classes and individual attention (Housel & Bell, 2001).

Likewise, faculty members have desired to teach online courses due to perceived advantages. One advantage cited was the ability to measure and monitor student accountability and participation in ways that were not feasible with traditional campus-based courses (Glover, 2006). And others, they like the flexibility of conducting classes while in other localities.

Students' interest in online learning is quite similar to the faculty members. They want the flexibility to take classes online without leaving their home or terminating their present employment. In addition, the cost associated traditional education, such as travel would be reduced or eliminated (Glover, 2006).

It is critical to measure the attributes that contribute to the adoption rate of online education by students and faculty members. The innovation diffusion model conceptualized by Dr. Everett Rogers has been applied by researchers to study the diffusion of new educational programs (Rogers, 2003). The advantages of online education perceived by faculty members may not be true as perceived by students. School administrators must carefully and intelligently craft an online education strategy that will benefit both stakeholders.

In order for online education to be sustainable, two things must happen. Faculty members must want to teach in an online environment. Likewise, students must want to learn in an online environment. It is imperative that both stakeholders perceive the attributes of online education to be better than traditional campus-based education.

Identification of Problem

Statement of the Research Problem. The objective of this research project is to investigate the influence of Rogers' five attributes of innovation diffusion on the adoption rates of online education by faculty members and graduate students in the College of Professional Studies at Hawaii Pacific University.

First hypothesis: the attributes of relative advantage, compatibility, complexity (simplicity), trialability and observability of online learning are positively related to students who have taken online courses, in the College of Professional Studies.

Second hypothesis: the attributes of relative advantage, compatibility, complexity (simplicity), trialability and observability of online teaching are negatively related to students who have not taken online courses, in the College of Professional Studies.

Third hypothesis: the attributes of relative advantage, compatibility, complexity (simplicity), trialability and observability are positively related to faculty members who have taught online courses, in the College of Professional Studies.

Fourth hypothesis: the attributes of relative advantage, compatibility, complexity (simplicity), trialability and observability are negatively related to faculty members who have not taught online courses in the College of Professional Studies.

Variables Defined and Explained

The rate of adoption is the dependent variable. The independent variables are: relative advantage, compatibility, complexity (simplicity), trialability, and observability.

Relative advantage is the degree to which an innovation is perceived as better than the idea it takes the place of (Rogers, 2003). The sub-dimensions of this attribute include economic profitability, low initial cost, a decreased in discomfort, savings of time and effort, and immediacy of reward.

Compatibility is the degree to which an innovation is perceived to be consistent with potential adopters' values (Rogers, 2003). The sub-dimensions of this attribute include socio-cultural values and beliefs, past experiences, needs of potential adopters and name.

Complexity is the degree to which an innovation is perceived as relatively difficult to understand and to use (Rogers, 2003). This attribute is reversed for this

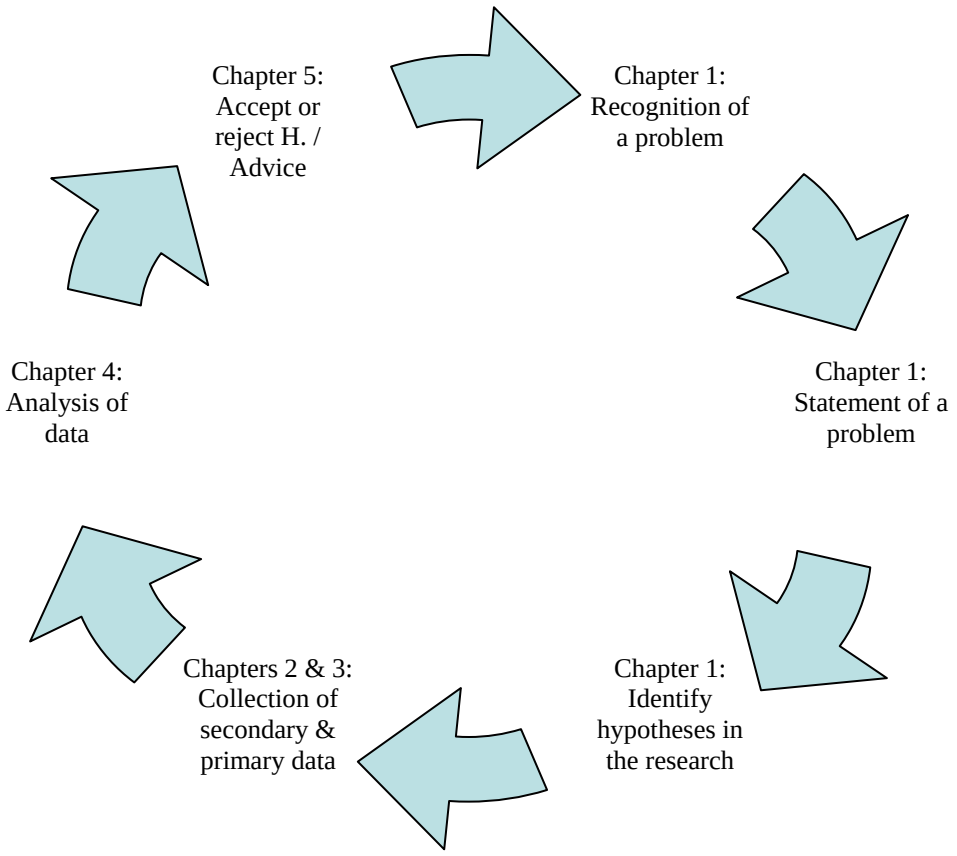
research project. Instead of measuring the perceived complexity of online education, the researcher measured the perceived simplicity of online education.

Trialability is the degree to which an innovation may be experimented with on a limited basis (Rogers, 2003). The subdimensions are the ability of adopters to try an innovation on installment basis, re-invention, and the ease of trying.

Observability is the degree to which the results of an innovation are visible to others (Rogers, 2003). The subdimensions of this attribute are the difficulty in observing and in describing to others.

Brief Overview of the Research Design

A research chart of figure 1.0 is illustrated below to display the research process.



Methods of inquiry. This chart illustrates a year and half of cyclical and methodical research process between the chapters in this project that began in the fall 2005 and ended in the summer 2006. The step or steps in each chapter affected the strategy and content of the next chapter. This research required the constant movement of back and forth to revise the chapters. The entire research project consisted of five chapters.

Chapter one in the research process consisted of three principal steps. The first step was to identify a problem in the field of organizational change and development. The second step was to articulate a clear problem statement. Finally, the third step was to state one or more hypotheses to be tested.

The first step in the research process was to identify a question that needs to be answered or a problem that needs to be solved. To identify a problem, the *Innovation Diffusion* book was extensively consulted. In addition, several research articles were searched and reviewed.

The second step in the research process was to articulate a clear statement of problem. In addition, it had to be grammatically accurate. One problem statement was articulated to investigate the influence of innovation diffusion on the adoption rate of online education. Due to the limitation of time, the researcher only articulated one problem statement. The division of sub-problems was not feasible for this research project.

The third step in the research process was to express one or several hypotheses. The objective was not to accept or reject the hypotheses, but it was to support or not support it. Four hypotheses were constructed from the problem statement. The first two

hypotheses concerned with how graduate students perceive online learning. The last two hypotheses concerned with how faculty members perceive online teaching.

Chapters Two and Three shared in the step of collecting data. In Chapter Two, secondary data was collected to guide this research project. On the other hand, in Chapter Three, primary data was collected for analysis that would support or not support the four hypotheses.

The fourth step in the research process was to collect secondary and primary data. The secondary data came from text books, research articles, case studies, conceptual articles, and opinion papers. They were retrieved from Internet search engine and online databases. The three primary online databases are HPU Ebscohost, Wilson-Education, and Emerald Full-Text. As for the Internet search engine, Google Scholar was an appropriate source for the thesis. To maintain a high level of credibility, none of the articles came from commercial and issue-based sites. These sites usually have produced materials that support their positions. In addition, the materials lacked the rigor of academic standards.

From the literature review, a research methodology to test the hypotheses was designed. The study was a quantitative research. The data was derived from answers by respondents in a scale rating survey. The researcher developed original questions for the survey. The survey included several questions from other studies that were relevant to the problem statement and hypotheses. Professors Glover and Ward of the Organizational Change program validated the survey questions. The administration of the survey was conducted in the beginning of June of 2006. There was a practical reason

to administer the surveys in that month. In June, students were not occupied with their final exams.

The primary data came from student and faculty member responses to the survey. They were asked to answer 21 questions regarding the five attributes of online education. The data was collected in two ways. First, the researcher approached all the faculty members whose courses were taught on campus in the College of Professional Studies. After all the respondents who completed the surveys on campus, the researcher contacted the faculty members who were teaching online classes to distribute the survey link to their students.

Chapter Four involved the actual analysis of the primary data collect through the survey collection tool. The statistical analysis utilized was descriptive statistics and frequency distribution.

The fifth step in the research process was to analyze results of the data and to form conclusions. As for the analysis, the findings were subjected to a descriptive analysis. The objective was to ascertain the strength of the relationship between the independent and dependent variables.

Chapter Five and the final chapter in this research project involved the summary of the findings. In addition, recommendations were required to complete this chapter.

The final step in the research process was to offer recommendations and solutions to the problem statement and hypotheses. An experimental project would be ideal, but time and resources were important considerations to the research design. Results from an experiment would show direct causations between the variables. Every aspect of the

research design for this research paper was influenced by work of "Diffusion of Innovations."

The first assumption. The first assumption was that online education has become an integral part of higher education at HPU.

The second assumption. The second assumption was that HPU would continue to increase the offering of online courses and degree programs.

The third assumption. The third assumption was that the demand from students and faculty members at HPU for online education would continue to grow.

Criteria for testing H/PS. Each independent variable was measured with Likert-type numerical values. First, the number "5" was designated as "strongly agree." Second, the number "4" was designated as "agree." Third, the number "3" was designated as "No opinion." Fourth, the number "2" was designated as "disagree." Fifth, the number "1" was designated as "strongly disagree." The dependent variable is the rate of adoption, and it is defined by the relative speed with which an innovation is adopted by members of a social system (Roger, 2003). First, the number "1" was designated for people who have taken or taught an online course. Second, the number "2" was designated for people who have not taken or taught an online course. Faculty members and students received the same survey. Of courses, there were one to two questions that were slightly different between the two surveys.

Limitations to the Research

Biases in research. All researches contain biases. It is critical for a researcher to recognize and state them clearly (Roger, 2003; Leady & Ormrod, 2005). With this recognition, the credibility of the research project and the researcher would be enhanced.

The diffusion model has been extensively researched on upon by numerous researchers in various fields. It is very well established in the diffusion community.

Because it is so established, several biases have surfaced. One of the most serious biases of the diffusion research is its pro-innovation bias (Rogers, 2003). The pro-innovation bias is the suggestion that an innovation should be quickly diffused and adopted by members of a social system. Members should not attempt to reinvent or reject the innovation. Two reasons can explain this bias (Rogers, 2003). The first reason has to do with history. The past diffusion researchers focused on innovations that were beneficial and profitable. The other reason had to do with the selection of the innovations. The tendency of researchers has been to study innovations that were successfully diffused. Many have chosen to ignore unsuccessful innovation diffusions because they intentionally chose to ignore them or they are simply their pro-innovation bias is too strong.

To overcome these two sources of innovation bias, researchers can apply five strategies, not necessarily mutually exclusive (Rogers, 2003). The first strategy is to conduct a diffusion research while the process is still in progress. A researcher could collect primary data at two or more points in time. The second strategy is to study unsuccessful and successful innovation diffusions at the same time. This type of comparative analysis should able to shed light on the gravity of pro-innovation bias. The third strategy is for change agents to tolerate and even encourage potential adopters to reject, discontinue or re-invent the innovation. When a re-invention occurs, it is possible that adopters in the social system feel the innovation is more compatible to their socio-cultural values and/or needs. The fourth strategy is to have researchers study how an

innovation diffuses in wider context. The fifth strategy is for innovation diffusion researchers or change agents to investigate and understand the motivation to the adoption of an innovation. At times, adopters may be unable to communicate the reasons why they have adopted or may be unwilling to communicate the reasons why they have adopted an innovation. Many times, researchers would use questionnaires to probe the motivation, but this method is not adequate.

Another bias is the inclination for diffusion researchers to side with the change agencies that support innovations rather than with individuals who are possible adopters (Rogers, 2003). Consequently, there is a tendency to blame the individuals rather the system for a problem. In some cases, it is suitable to focus on the individuals to solve problems. For the most, an individual problem is part of a larger problem within a larger social context. Later adopters and laggards are often individually held responsible for not adopting an innovation and/or for being much later in adopting than other adopters of their social systems.

Three reasons explain why an individual-blame bias exists in diffusion research (Rogers, 2003). The blame-orientation of sponsoring change agencies affects the perception of diffusion researchers. Many of these agencies tend to focus on the individuals as the source of the problem. Another reason could be that fact that it is much easier for diffusion researchers to change individuals than the entire social system. Finally, it is easy to have access to individuals than the whole system to conduct diffusion research. Many of the research tools have been created measure single units or individuals. Diffusion researchers rely heavily on surveys, and this methodology tends to reinforce this bias.

Innovation diffusion researchers can overcome the individual-blame bias by applying at least one out of the three identified strategies (Rogers, 2003). One strategy is for diffusion researchers to seek other substitutes to individuals as a unit of measurement and analysis. Another strategy is to have an open mind regarding issues and not to take the positions of agencies at their face value. To go one step further, all stakeholders in the innovation diffusion process should be involved in defining the innovation problem. The agencies and their change agents should not have exclusive power in this process.

A general bias that diffusion researchers may encounter is the results may not by representative of the actual population. This bias occurs when the sample is not randomly selected. The only time when random sampling is possible is when researchers have control of the population. To overcome this problem, the only way is to collect a large sample. Hopefully, the sample results would reflect the results of the population.

Constraint in research. Time is the great constraint for researchers (Leady & Ormrod, 2005). Often, a researcher wants to conduct a research project that is comprehensive and significant for publishing purpose. The size of the research may take years. When time is not in the control of the researcher, he or she needs to reduce the scope of the research.

The five attributes of innovation diffusion explain the adoption rate of innovations from 49 to 87 percent, but it does not explain everything (Rogers, 2003). In addition to main five, other variables such as (1) the type of innovation-decision, (2) the nature of communication channels diffusing the innovation at various stages in the innovation-decision process, (3) the nature of the social system in which the innovation is diffusing, and (4) the extent of change agents' promotion efforts in diffusing the innovation, affect

an innovation's adoption rate. The time frame it would take to explore these other variables may take years of research.

Problems in research. Time is an important variable in the innovation diffusion research, but it is one of its greatest enemies (Rogers, 2003). The accuracy of the answers is highly dependent upon the ability of adopters to recall and the time frame. In addition, the educational level and memory of individuals affect the accuracy of the answers. Consequently, most innovation diffusion researchers prefer to survey respondents as soon as possible.

Another problem in innovation diffusion research is the problem in determining causality (Rogers, 2003). The data collected from surveys cannot address the "why" in innovation diffusion research. Field experiment is a research methodology is appropriate in achieving this goal. Rogers (2003) stated that "field experiment is an experiment conducted under realistic conditions in which pre-intervention and post-intervention measurements are usually obtained by surveys" (p.128). An example of a field experiment is to use opinion leaders to assist in diffusing an innovation in one social system, and not to use opinion leaders to assist in diffusing an innovation in another social system.

The accuracy of recollection is a major problem in innovation diffusion research, and field experiment is just one the ways to address it (Rogers, 2003). Another way would be to collect the data while the diffusion process is still in progress (Rogers, 2003). One option is to collect data at many points in the process. Adopters are asked to recall in a short period of time. Another option is to assess the perception at the time of the adoption. To supplement the memory of respondents, diffusion researchers could gather

archival records. The final way to increase the accuracy is to have quality survey questions through pre-testing and to train interviewers.

Chapter 2 - Literature Review

Overview

The literature review includes five areas (1) the elements of innovation diffusion, (2) research related to the independent variables, (3) research related to the dependent variable, (4) research related to the relationships among the variables, and (5) Significance of proposed research to previous literature.

The flow of this literature review goes from a general summary of the innovation diffusion process to the critical and detailed examination of the five primary attributes of the online learning innovation. The four elements of innovation diffusion are covered under the "overview" heading. The other areas are covered under each respective heading.

Rogers (2003) stated "diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 35). It is the communication of a perceived new idea by members of a social system. The diffusion process consists of four main elements: innovation, communication channels, time, and the social system (Rogers, 2003). These four main elements are presented in every diffusion research and campaign.

An innovation is an idea, practice, or object that is perceived to be new by an individual or a collective group of people in a social system (Rogers, 2003). The innovativeness of an idea is based on the subjective perception and not the objective measurement. An idea can be known for a long time and still be considered an innovation if a particular group of people consider it to be new. Most people judge an idea or practice without conducting detailed and in-depth research.

An innovation is also known as a technology (Rogers, 2003). It has two components: hardware and software. Hardware is the tool, and software is the information that enables tool. A computer would be considered hardware and a video gram would be considered software.

The way people in a social system perceive the five attributes of an innovation determines its rate of adoption (Rogers, 2003). The five attributes are relative advantage, compatibility, complexity, trialability, and observability. In the adoption process, relative advantage and compatibility are the two most significant attributes. This claim may not be entirely accurate. The degree of importance of each respective attribute is based on the context of an innovation. An innovation may have high degree of relative advantage and compatibility, but it could be extremely complicated to comprehend by members of a social system. It would be difficult for people to adopt an innovation if they do not understand its relative advantage and compatibility.

An important sub-dimension of trialability that affects the adoption rate of an innovation is known as re-invention (Rogers, 2003). It is a process where people in a social system decide to change or modify the original aspects of an innovation to fit their needs and culture. If people were able to modify an innovation, its adoption rate would increase. Generally, agencies and change agents have not encouraged potential adopters to modify the innovation from the original features. Rogers had encouraged diffusion researchers and change agents to allow re-invention to occur.

In order for an innovation to diffuse, a communication process must occur. It is the second element of the diffusion process. We will turn our attention to it.

According to the author, communication is a process where people create and share information with one another to reach a mutual understanding (Rogers, 2003). Because innovation diffusion is a communication of new ideas, one of the two parties must not have any prior knowledge of the innovation.

A communication channel is the way by which messages transfer from one individual to another (Rogers, 2003). The communication channel includes mass media, interpersonal communication, and interactive communication. Each communication channel serves a specific purpose in the diffusion process.

Mass media is a communication channel that is more effective in informing potential adopters in a social system regarding the existence of an innovation (Rogers, 2003). Potential adopters are able to only receive general information about an innovation. In essence, the intent is to create awareness, and not to persuade. Mass media channel includes television, radio, magazines, and newspapers.

On the other hand, interpersonal channel is more effective in convincing an individual to adopt an innovation, especially if the change agents and potential adopters are similar of education, socio-economic status, and other ways (Rogers, 2003). Interpersonal channels require the face-to-face interactions between two or more individuals. This is where potential adopters can obtain specific information about the innovation on it may help them solve their problems.

Another important and emerging communication channel is interactive channels (Rogers, 2003). It involves using the speed and reach of the Internet to diffuse innovations. In my opinion, the Internet may not necessarily be a new communication channel. It seems to be a form of mass media and interpersonal channel. On the one

hand, it is a form of mass media when change agents mass e-mail about an innovation. On the other hand, it is a form of interpersonal channel when a change agent communicates with one or more individuals in real time with video and audio capabilities. The Internet will not entirely replace face-to-face interaction because many innovations require change agents to be physically at the location of potential adopters. In addition, the Internet has not become universally accessible (Rischard, 2002). This is especially true in impoverished countries. Besides the issue of access, many people have not been trained in using the Internet. There are many people who are not comfortable with using personal desktops and the Internet.

The general agreement in communication theory is that communication is more effective if both parties are similar in education, socio-economic status, and other factors (Rogers, 2003). People tend to interact with others who are similar to them. This situation creates challenges in the diffusion process. Change agents are usually different to their potential adopters in terms of education, economic, culture, and language. Change agents tend to be better educated. This creates a barrier in the diffusion of the desired innovations. If a change agent and the people in the social system possess the same knowledge and expertise of the innovation, diffusion cannot occur. The solution is to have change agents share with potential adopters in similarities in education, cultural, and language factors, but not share in the knowledge of the innovation. Unfortunately, change agents need to have a different educational and cultural background in order to be expert in the innovation.

Time is the third element in the diffusion process, and it has received numerous criticisms from diffusion researchers (Rogers, 2003). This element encompasses three

components: (1) the innovation-decision process of an individual from awareness to either adoption or rejection, (2) the innovativeness of an individuals or people in a social system, and (3) the adoption rate of an innovation in a social system.

The innovation-decision component is the process, which individuals in a social system goes from gathering knowledge of an innovation, forming an attitude toward an innovation, deciding to either to adopt or reject, implementing and using the new idea, and confirming the decision (Rogers, 2003). If an innovation allows re-invention, it will occur at the implementation stage. During the confirmation stage of the innovation-decision process, adopters may choose to discontinue the innovation.

Mass media is most effective at the knowledge gathering stage (Rogers, 2003). Here, potential adopters are seeking general information about the innovation in term of its purpose and functions. On the other hand, interpersonal channel is most important in the diffusion process (Rogers, 2003). Potential adopters are seeking more specific information on how the innovation can solve their particular problems. So, this is where change agents engage in face-to-face interactions to communicate the relative advantage of an innovation.

The time it takes for an individual to go through the different stages of the innovation-decision process varies from person to person (Rogers, 2003). Some people only spend a short period of time in the knowledge and persuasion stages. Others may spend a length period of time. The innovativeness of potential adopters in a social system plays an important role in determining the time someone needs to go through all the stages.

Innovativeness is the second component of the element of time, and it refers to the degree to which a person is receptive to adopting an innovation than other members in a social system (Rogers, 2003). People who are late in adopting an innovation tend to be in the lower scale of the socio-economic ladder. In addition, they have very little exposure to mass media, such as television and newspapers. They obtain most of the new ideas through interpersonal interactions. The implication is that mass media as a tool is sufficient in persuading "early adopters" to adopt an innovation. There are five categorizations to the innovativeness of members in a social system. These five categorizations are (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards.

Rate of adoption is third component of element of time (Rogers, 2003). In innovation diffusion, the adoption rate is depicted as an S-shape curve. Initially, the shape of the curve is pretty flat. After awhile, the curve begins to climb. This is when a majority of people have adopted the innovation. Eventually, the curve begins to flatten again. It is an indication that the adoption rate has reached critical mass. Very few people in the social system are left to adopt the innovation.

The adoption rate of an innovation varies in different social systems (Rogers, 2003). The structure of a system has a direct affect on the diffusion process. Social system is the last element of the diffusion process.

Rogers (2003) stated "a social system is defined as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 23). The interrelated units could be a family, members of a church, club, or organization. The structure of the social system, its norms, the role of change agents and opinion leaders,

types of innovation decisions, and the consequences of innovation are components of a social system.

Social structure is the arranged pattern of human behavior of a social system (Rogers, 2003). People are expected to act in a certain ways to given a situation. It provides some sense of stability and reliability in the prediction of human behavior. Another type of system structure is communication structure (Rogers, 2003). It is how people communicate among one another. They like to talk to those who are alike or share similar attributes. Both structures affect the diffusion of an innovation in a social system.

System norms are accepted behavior in a social system (Rogers, 2003). It dictates how people should behave. It is a guide for people to follow in time of uncertainty. The author has mentioned that it can be a barrier to the diffusion of an innovation. On the other hand, it can be enabler to the diffusion of an innovation.

Opinion leaders play a critical role in the diffusion of innovations (Rogers, 2003). They can either foster or impede the process in a social system. Their influences on other people are due to their technical competence, social accessibility, and conformity to social norms. Formal positions or status are not a factor in their role as opinion leaders. I disagree with this assessment from the author. In many organizations, opinion leaders hold formal leadership titles.

Often, change initiatives in organizations are the primary responsibility of a chief executive officer (Kotter, 1996 & Doppelt, 2003). Without the full support and participation from the top, most change programs are not sustainable. Rejection or discontinuance will occur because other people in an organization want to preserve the

status quos. Opinion leaders tend to be higher in educational and socio-economic echelon. Importantly, they have wide access to the interpersonal network. This unprecedented access is also attributable to their perceived extraordinary ability to conform to social's norms. They make the ideal candidates for change agents to communicate an innovation to their peers. They do not have the difficulty in understanding the nature and functions of an innovation and in communicating it to their people in the social system. Their influence and respect could be diminished if they are too aggressive in supporting the positions of change agents.

The effort of change agents affects on the adoption rate of an innovation (Rogers, 2003). They usually work for change agencies with specific social issues. They all have a university degree and possess in-depth knowledge of certain issues. Because of these attributes, it can be a barrier to effective communication with potential adopters. In addition to opinion leaders, change agents employ aides to assist them.

Types of innovation decisions are another critical influence in the diffusion of innovations (Rogers, 2003). These three types are (1) optional innovation-decisions, (2) collective innovation-decisions, and (3) authority innovation-decisions.

Potential adopters with the optional innovation-decisions type have the choice to either reject or adopt an innovation, without the demand of the social system. With the collective innovation-decisions type, individuals must surrender their decisions to either adopt or reject, to the will of the collective or social system. The diffusion of an innovation is known as authority innovation-decisions when potential adopters have little or no choice in the decision process. In this case, the authority innovation-decisions type is more important than the five main attributes of innovation diffusion. For the most part,

adopters must adopt an innovation even though they may perceive it to not have any relative advantage and compatibility with their past history, needs, and cultural values.

The final component in a social system that affects the adoption or rejection of an innovation by potential adopters is consequences of the innovations (Rogers, 2003). Three categorizations are (1) desirable versus undesirable consequences, (2) direct versus indirect consequences, and (3) anticipated versus unanticipated consequences. Consequences that are desirable, direct, and anticipated have a positive on the adoption rate and its sustainability. Unfortunately, diffusion researchers and change agents are unable to predict the forms of consequences of an innovation.

Change agents could influence the consequences by taking into account the cultural or compatibility factor. They can consider the factor of cultural due diligence by recognizing, respecting, and reconciling conflicting or opposing forces (Trompenaars & Hampden-Turner, 2002). First, people need to see the differences in cultures and things. Second, they need to understand that people have the right to be different in thinking and behavior. Third, they can reconcile opposing view points in two ways. On the one hand, they begin with their cultural orientation, then reconcile with the other cultural orientation. On the other hand, they could begin with other cultural orientation, then reconcile with their own cultural orientation. In a sense, the act of reconciliation is like the act of re-invention.

As stated in Chapter One, researchers have applied the innovation diffusion model to the area of education. The following sections are devoted to examining the attributes of online education innovation.

Research related to the independent variables

Rogers' five main attributes of innovation diffusion affected the adoption rate of online education (Mwaura, 2004; Meyers, 2002; Jones, Lindner, Murphy, & Dooley; 2002; Dooley & Murphrey, 2000; Isman & Dabaj, 2005; Hyland, 2003). The attributes are relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Some studies focused on all of the five attributes, and others did not. Also, some studies did not explicitly state the variables as the innovation diffusion attributes; nevertheless, the attributes and its sub-dimensions were identifiable.

Online education is becoming an important teaching technological tool for academic institutions and faculty members, but there are still some who are resisting the adoption this innovation (Mwaura, 2004). Eventually, students will not choose to attend universities that do not have an online component. This research report investigated how Rogers' five attributes of innovation diffusion affected the adoption rate of online learning by faculty members.

The researcher used a qualitative method to examine why many faculty members did not adopt online teaching tools that were readily accessible (Mwaura, 2004). This research study concentrated on this question, "What factors will influence the adoption or rejection of online teaching by faculty members?" Rogers' diffusion of innovation provided the theoretical framework to answer this question.

The researcher conducted interviews with 31 faculty members and five administrators at Ohio University and observed faculty members who attended various workshops and seminars to collect data (Mwaura, 2004). The faculty members who participated in this study were those have adopted online education, those planning to

adopt online education, and those have rejected online education. The criteria for selecting these participants were based on several factors. They had the choice to either to adopt or reject this learning method. In term of resource availability, they all had equal assess to it. The five university administrators who participated in this study were supportive of the faculty members who adopted or planning to adopt online education.

The results of this research study only indicated three attributes had a significant influence on the adoption of online education by the faculty members (Mwaura, 2004). The five attributes are relative advantage, compatibility, complexity, trialability, and observability. Rogers (2003) maintained that these five attributes play a critical role in the diffusion of an innovation. His research indicated that only complexity, relative advantage, and compatibility were significant in the diffusion process, and trialability and observability were not.

These two attributes were found not be significant in the adoption of online education by faculty members.

Trialability is “the degree to which an innovation may be experimented on a limited basis” (Rogers, 2003, p. 16). The results from this research did not indicate a significant relationship (Mwaura, 2004). Only one faculty member required a trial before she was willing to implement online education as part of her teaching options.

Rogers (2003) defined observability as the as “the degree to which the results of an innovation are visible to others” (p. 16). The faculty members were not persuaded by the various workshops and seminars on online learning in the decision-making process (Mwaura, 2004). Rather, it was one-on-one training and self-study that had a greater impact.

The following three attributes of innovations affected the adoption rate, according to the research (Mwaura, 2004).

Relative advantage is “the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers, 2003, p. 15). Thirty-one out of the third-five professors adopted online education (Mwaura, 2004). The other four were in the process and thinking about integrating online education into their teaching options. Twenty-six of them expressed various advantages of online software. These advantages can be categorized in Rogers’ (2003) sub-dimensions of relative advantage that are consisted of economic profitability, a decrease in discomfort, a saving of time and effort, immediacy of reward, low initial cost, and social prestige. In this study, low initial cost and social prestige were not considered to be not influential sub-dimensions. The reason why low initial cost was not factor was due to the fact professors received free service support and grants for their online learning development. As for the non-factor of social prestige, they had the freedom to choose various teaching approaches.

Reduction of printing cost was cited as an economic advantage by seven faculty members (Mwaura, 2004). It normally cost five cents to print one copy. In addition, students can submit their work online. It was a benefit for both faculty members and students. Actually, school administrators requested them to reduce printing cost, but no recommendations were offered.

Faculty members found that online software reduce discomfort in two ways (Mwaura, 2004). No one enjoy repeatedly doing the same things. Often, they worry whether all of their students receive their materials. By posting materials online, students can have access to all the materials, even if they were absent from classes. In addition,

the communication was much easier for them. Before the adoption of the online software, some professors printed out the materials and verbally communicate with the students. Now, students can read the instruction anywhere online. Finally, two professors even felt they can focus on the synthesis of concepts, rather than just repeating what students read from their textbooks. On the other hand, professors who rejected online education claimed that it increases their discomfort. One professor expressed this increased discomfort with how online education made him felt socially isolated.

For the most part, faculty members found online education save time for them to do other important activities, such as research and service (Mwaura, 2004). The initial setup was time consuming. After the initial phase, they did not need to reproduce their work. Everything can be posted online for every semester. In addition, they were able to post assignments for students. Similarly, students were able to complete assignments quickly. They could choose complete assignments ahead of time and submit it.

The professors who adopted online education were able to immediately see the benefits (Mwaura, 2004). Two important benefits that affected students were cited. Because students do not see their peers and the professors, they were forced to communicate with virtual discussions and e-mails. The other benefit was that students did not have to take any more notes. They could use the time to learn and to focus on their assignments.

Compatibility is “the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 2003, p. 15). The results of the research indicated that compatibility was a

significant determinant of online education adoption rate by faculty members (Mwaura, 2004).

For the faculty members who rejected online education, they felt this teaching tool was inconsistent with their socio-cultural values and beliefs (Mwaura, 2004). They rejected online education because it took away the job of real teaching. Also, they believed it was not appropriate to transfer complex ideas and concepts. On the other hand, faculty members who adopted online learning felt that this teaching tool was consistent with their existing socio-cultural values and beliefs (Mwaura, 2004). For those who used the software to complement their classroom instruction, they used the screens to visually aid their students to learn the materials.

Past experience shaped the opinion of faculty members regarding the online technology (Mwaura, 2004). Professors, for the most part, were hesitant with new technology because they were comfortable with the traditional methods of teaching. This was especially true when they had negative experiences with past adoptions of online education technologies. New professors seemed to be the ones that were willing to embrace the online technology. They were eager to experiment with new teaching methods.

The ability of the online technology to meet the needs of faculty members was an important sub-dimension (Mwaura, 2004). On the one hand, faculty members who adopted online education technologies explained that both professors and students were able to engage in learning without the restrictions of time and space. On the other hand, faculty members who rejected online learning technologies argued that they were not

measured by how well they teach. Instead, they tied promotion to their ability to produce quality research materials.

Complexity was the last attribute that the researcher looked at in his study. According to Rogers (2003) it is "the degree to which an innovation is perceived as difficult to understand and use (p. 16). The degree of difficulty of online education technology was a critical factor in the decision either to adopt or reject (Mwaura, 2004). The difficulty was linked to the technical language that instructors used in training and to the pace of the training sessions. Many of them complained that they were lost in the training sessions. In addition, they were disappointed with the training sessions because it was designed to train them with the features of the software, and not with how to integrate the technology to their courses.

The fear of trying something new also contributed to the perception that online education technologies were difficult to learn (Mwaura, 2004). One faculty member was very fearful with her first day of class using the online education technology. Another faculty member expressed her fear of this technology due to the fact she did not grow up with using it.

Another factor associated with the complexity of online learning was the lack of academic training in educational theories and practices (Mwaura, 2004). In school, professors were trained in their respective disciplines, whatever it may be. They were not trained the mechanics and the theories of teaching.

In conclusion, faculty members need to perceive that online education technology is consistent with their teaching styles, existing values, easy to understand and use, and have advantages over their current teaching methods, to adopt it. They need time to learn

the technology before teaching their courses; therefore, training is very important. In addition, they need financial incentive to express their teaching creativities.

This research project comprehensively examined all the five attributes of innovation diffusions and its sub-dimensions. The population for this research was not treated to random selection. Surveys and participant observation were the two methods used to collected primary data. According to the study, relative advantage, compatibility, and complexity were the primary attributes that determined the decision either to adopt or reject. It did not measure how fast the faculty members adopt online learning technology. It was a comparative analysis of those who adopted and rejected.

Dr. Meyers of University of North Dakota conducted a research that explored the impact of policy on the diffusion of distance education (Meyers, 2002). In this research, the question asked is "whether various policies have an effect on the growth of distance education?" The policy included faculty compensation, workload, intellectual property, geographic service area.

During the fall of 2001, Dr. Meyers sent surveys to members of the Western Cooperative for Educational Telecommunications (Meyers, 2002). Seven out of 150 institutions that belonged to Cooperative for Education Telecommunication (WCET) participated in this research. The results from five out of the seven institutions were deemed acceptable.

The result of enrollment was the objective of the research, as it related to faculty-related policies and institutional/state policies (Meyers, 2002). The survey for the institution included questions on the number of distance education enrollment per academic year and the number of fully distance courses offered by academic year. As for

faculty-related policies, the survey questions focused on (1) faculty compensation (whether faculty were paid for course development), (2) faculty workload (whether faculty taught distance education courses in load or as overload, and (3) intellectual property (whether the policy allocated ownership of distance education courses to the institution, the faculty, or both). Also, questions were asked regarding financial support from the state, the existence of mission statement, and geographic service areas.

The findings of this research study were developed into five case studies, as each case correspond to each institution (Meyers, 2002). Each case was given a letter, and it was from "A" to "E."

Case "A" received financial support from the state, but it did not affect the enrollment number (Meyers, 2002). It was compensation, workload, and intellectual property that had a significant affect on enrollment. Faculty members were given money to create online courses. They were given the choice to treat online courses as either as an add-on or part of their workload. Finally, school management allowed faculty members to share in the ownership of the online courses that they created. Online education was not part of the institution's mission statement.

Case "B" did not receive funding from the state for its online education initiative in its first year, but in each year thereafter (Meyers, 2002). Growth in enrollments was higher in the first and last years. Policies were supportive of faculty compensation and workload. Despite its long history with online education, the institution had just begun to develop an intellectual property policy for online courses. State policies were also supportive, including the elimination of service areas, and a state plan for online education. Like Case "A," its mission statement did not mention online education.

Case “C” never received funding from the state for its online learning program, but its enrollment increased with the addition of new courses (Meyers, 2002). Faculty policies were supportive of compensation for developing and delivering online courses, online education courses taught in load, and an intellectual property policy of shared ownership. Other policies were not so supportive, including the existence of service areas and no state plan for online education. Like the other two cases, the mission statement did not mention the online education component.

Case “D” received fund from the state every year of its online learning program, but did not added new courses in year 3 and had increased its new courses by 80% in year 4 (Meyers, 2002). Largest increases in enrollment were in the first and fourth years of online education offerings. Faculty policies were accommodating of faculty, including compensation for developing online courses, online courses taught in load, and a shared intellectual property rights. State policies were also supportive, including the elimination of service areas, an online education plan, and a specific mention of online education in the institution’s mission statement.

Case E received funding from state in its final year of operation (Meyers, 2002). Similar to all other cases, it received compensation for new course development, workload allocation, and intellectual property ownership. It did not receive support for area services and state planning. Online education was not present in the institution’s mission statement.

The research produced four conclusions (Meyers, 2002). First, state funding was not a factor in the growth of enrollment. All five institutions experienced healthy growth without the funding. Second, the growth of enrollment was on the upward trend even

though the growth was sporadic. Third, all five institutions had policies relating to compensation, workload, and intellectual property that were friendly to faculty members. Finally, the market was a powerful force in the adoption of online education by faculties.

Both research studies concluded that funding for course development was an important factor in convincing faculty members to develop online courses. The specific finding from this case study confirmed Dr. Mwaura's finding that low initial cost was not a factor in the diffusion process. Intellectual property was a component of economic profitability. Professors probably received some type of financial income from their online programs. This also corresponded with Dr. Mwaura's finding. This finding, ironically, may contradict Dr. Mwaura's findings that social prestige was not a factor in the diffusion process.

According to Dr. Meyer's findings, all five institutions allowed their faculty members to enjoy the benefit of owning their creation of online courses. No doubt financial reward was an important part of intellectual property. They may enjoy the pride of creating an online learning program that could be a model for their peers to emulate. Unfortunately, she did not explicitly state the benefits in detail.

The option for the faculty members to have online courses either as part of their workload or as an addition is an element of the savings time and effort sub-dimension. It would not make sense for professors to have online courses in addition to their regular classes would defeat the purpose of saving time and effort. For the most part, a professor does not have to start assignment preparation over again.

Conflicting views existed regarding the quality online education compared to traditional face-to-face teaching (Jones, Lindner, Murphy, & Dooley; 2002). On the one

hand, many professors believed that the quality of learning in an online education was not equivalent to the traditional face-to-face instruction. On the other hand, others believed that the quality was the same. The objective of this research project was to resolve this contradiction.

Another view insisted that online courses required more time and effort from the professors. As mentioned by Jones, Lindner, Murphy, & Dooley (2002), Visser (2000) found that online courses can take up to twice as much time and effort to accomplish the task. However, the authors argued that further researches were needed.

Another barrier to the adoption of online education by professors was the possible the incongruent values and beliefs (Jones, Lindner, Murphy, & Dooley; 2002). The ability of online technology to expand the educational opportunity for more people just do not sit well with some professors who believe a college education was for the selected few.

Dooley & Murphy (2001) found that College of Agriculture faculty members at Texas A&M University did not have the skill in using online technology to effectively teach (Jones, Lindner, Murphy, & Dooley; 2002). This deficiency could be explained with the fact that the school did not provide sufficient training. Consequently, they felt the support infrastructure was not there.

Lindner, Murphy & Dooley (2001) discovered that tenure status and academic rank had an effect on the adoption of online education (Jones, Lindner, Murphy, & Dooley; 2002). The professors without tenure had the highest adoption rate. This led to the conclusion that it was the expectation of their employment. The ones who were

comfortable with online technology were discouraged to adopt it due to the current promotion policy.

The objective of the research project was to explain the philosophical position towards distance education competence, value, and information technology support offaculty in the College of Agriculture and Life Sciences at a land grant institution (Jones, Lindner, Murphy, & Dooley; 2002). Specifically the objectives of the project were (1) to describe and examine teaching faculty by philosophical position towards online education, (2) to examine differences in online learning competency score by philosophical position to online education, (3) to examine differences in online education value score by philosophical position towards online education, and (4) to examine differences in online education information technology and support score by philosophical position towards online education.

To answer these four objectives, the researchers used primary data (Jones, Lindner, Murphy, & Dooley; 2002). The entire faculty population of 315 were selected to participate in the survey. After two weeks, 196 faculty members returned the completed surveys, for an impressive initial response rate of 62.2%. The non-respondents then received reminder mails with the same survey questions after three weeks. Again, mails or emails were sent as a second reminder four weeks after the first reminder. Totally, 252 people participated in the surveys, for a final 80% response rate.

The survey administered to the faculty members had two parts (Jones, Lindner, Murphy, & Dooley; 2002). The first part of the survey was designed to identify selected personal and professional characteristics of the respondents and describe their philosophical position towards online education. The second part was to measure three

factors: competence, value, information technology and support. As for competence, eleven questions were created to measure the perceived level of ability that respondents possess in the use of electronic technologies to teach online courses. To measure value, the researchers created nine questions ascertain the importance of electronic technology in the minds of respondents. Finally, information technology and support referred to the eight questions created to measure the perceived availability of equipment, facilities, and training to determine the extent to which the campus environment supported the use of technologically mediated instruction on- and off-campus.

A five-point Likert-type response scale was utilized (Jones, Lindner, Murphy, & Dooley; 2002). The response choices were: 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Neither Agree nor Disagree," 4 = "Agree," 5 = "Strongly Agree." The researchers considered the likelihood that many of the faculty members would not have strong opinions on some the questions due to a lack of information about, and or exposure to, these fairly new technologies. Reliability was established by calculating Cronbach's Alpha. The alpha for the 28 questions in the second part of the survey was .82. Reliability estimates for competency scale (.81), value scale (.84), and information and technology support scale (.74) were also calculated.

A board of five experts composed of faculty members from the Department of Agricultural Education, the Department of Educational Human Resource Development, and the Center for Distance Learning Research validated the survey questions. Selected faculty members from the colleges of Education and Liberal Arts completed a pilot test of the instrument. Minor changes in the instrument were made based upon evaluation of the pilot test and suggestions from the panel of experts.

The numerical results of competence, values, and information technology and support were calculated by summing all the responds of each respective factor (Jones, Lindner, Murphy, & Dooley; 2002). The total online education score was determined by summing responses to all of the 28 items used in part II of the survey.

Table 1. Total Distance Education Score

Online Education Scores	Mean	Standard Deviation
Online Education Competence Score	32.0	8.3
Online Education Value Score	33.2	5.7
Online Education Information Technology & Support Score	23.4	5.7
Total Online learning Score	88.6	

The results for objective indicated that majority did not oppose online education (Jones, Lindner, Murphy, & Dooley; 2002). Eighty-five percent of the faculty members were not philosophically opposed to online education. Fifteen percent of the faculty members were philosophically opposed to online education. Because the t is at 1.59, there is no significant relation between total online education score and the attitude of faculty members toward online education.

Table 2 Total Distance Education Score

Overall Online Education Score	N	M	Standard Deviation	T
For	217	89.1	14.0	1.59
Opposed	35	85.1	14.5	

Note: *M*= Summated Competency Score + Summated Value Score + Summated Information Technology and Support Score

The second objective of the research project was to ascertain whether the level of competence in the use of online technology affect the adoption rate of online education (Jones, Lindner, Murphy, & Dooley; 2002). According to the study, there was no correlation between the two factors.

Table 3. Online Education Competence Score

Online Education Competence Scores	N	M	Standard Deviation	T
For	217	32.1	8.2	0.52
Opposed	35	31.3	9.2	

Note: *M*= Summated 11 item-5 point Likert-type scale

The third objective of this research was to determine whether the value of online education is consistent with the value of faculty members (Jones, Lindner, Murphy, & Dooley; 2002). The results indicated that a strong relationship between these two variables, with a 4.31 t-statistics.

Table 4. Online Education Value Score

Value	N	M	Standard Deviation	T
For	217	33.8	5.6	4.31*
Opposed	35	29.4	5.1	

Note: *M*= Summated 9 item-5 point Likert-type scale; 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree; *$p<.05$.

The fourth objective was to determine the relationship between information technology and support and attitude toward online education (Jones, Lindner, Murphy, & Dooley; 2002). The researchers did not find a relationship between the two variables. The t-statistics was at – 1.05, which is below the 2.0 requirement.

Table 5. Online Education Information Technology & Support Score

Information Technology and Support Score	N	M	Standard Deviation	T
For	217	23.3	5.6	- 1.05
Opposed	35	24.4	6.3	

Note: *M*= Summated 8 item-5 point Likert-type scale

The findings of this research project concluded that faculty's competence in online technology and information technology and support did not affect their adoption of online education. However, the value of online education did impact its adoption. The researchers recommended that change agents for the school need to effectively communicate how the value of online education matches the value of faculty members.

Similar to the other research projects, this one relied on the survey method to collect its primary data. The reliability of the data was high when 80 percent of respondents returned their surveys. In term of quantitative analysis, the researchers went beyond descriptive statistics to include regression analysis.

It was interesting for this research project to contradict the other two research findings that competence of electronic technology and technical support were not factors in influence the attitudes of faculty members. More literature reviews are needed to explore this contradiction. However, all three reports concurred that the compatibility attribute of innovation diffusion plays a crucial role in the adoption rate of online education.

The following research project conducted by Dr. Dooley and Dr. Murphrey in the winter 2000 was more comprehensive than the above researches. They investigated how the perceptions of administrators, faculty members, and support staff affected the

adoption rate of online education. Rogers' innovation diffusion model provided the theoretical framework to study this problem (Dooley & Murphrey, 2000). Specifically, they focused on the five primary attributes of innovation diffusion.

To investigate the perceptions and reactions of administrators, faculty members, and support staff, the researchers employed the SWOT (strengths, weaknesses, opportunities, and threats) Analysis (Dooley & Murphrey, 2000). They associated strengths and opportunities as promoters of innovations, and weaknesses and threats as detractors of innovations. They approached this research project from a holistic perspective.

The researchers used a snowball sampling technique to select respondents for the interviews (Dooley & Murphrey, 2000). High level school administrators recommended key employees who were assumed innovators in using online learning technologies. The researchers conducted a total of 42 interviews. The interviewees composed of 16 school administrators, 15 faculty members, and 11 support staff.

The researchers employed various qualitative techniques to ensure truth value, applicability, consistency, and neutrality (Dooley & Murphrey, 2000). They spent approximately four months interviewing respondents. The length of each interview usually lasts from 30 minutes to 90 minutes. The interviews were semi-structure, so the researchers were able ask probing and in-depth questions. This technique was the primary method in collecting primary data. To ensure high reliability of the answers, they triangulated it with various other supporting documents.

To analyse the primary data, the researchers used the constant comparative method (Dooley & Murphrey, 2000). This method has four stages: 1) comparing

incidents applicable to each category, 2) combining categories and their properties, 3) restricting the construction, and 4) writing the construction.

The researchers used the Venn diagrams for each component of the SWOT Analysis to summarize the data (Dooley & Murphrey, 2000). The three overlapping circles represented the three perspectives. A letter represented a category, and the dominant category had an asterisk next to it. Categories that were common or exclusive to a particular perspective can be examined by observing the overlapping circles (See Figures 1-4).

Figure 1. Strengths Expressed by Respondents based on Group Affiliation

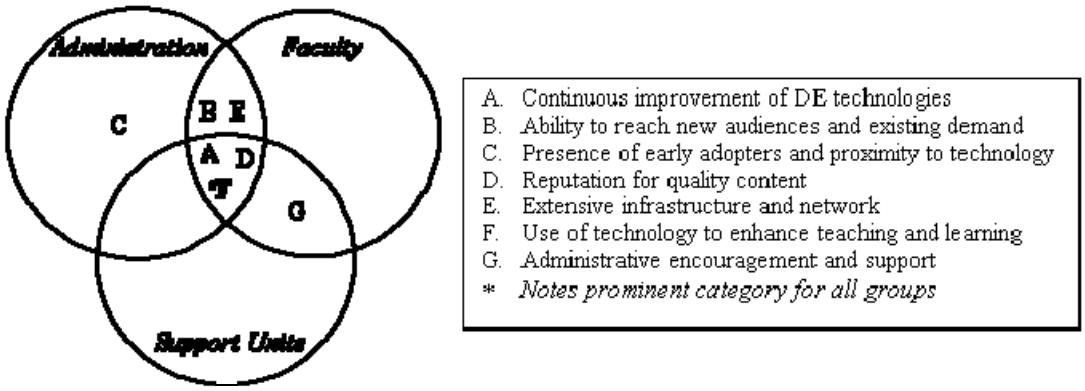


Figure 2. Opportunities Expressed by Respondents based on Group Affiliation

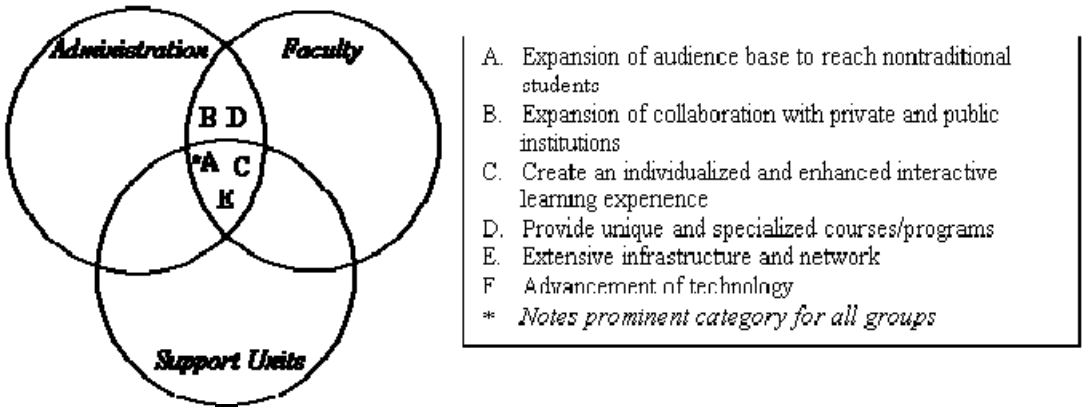
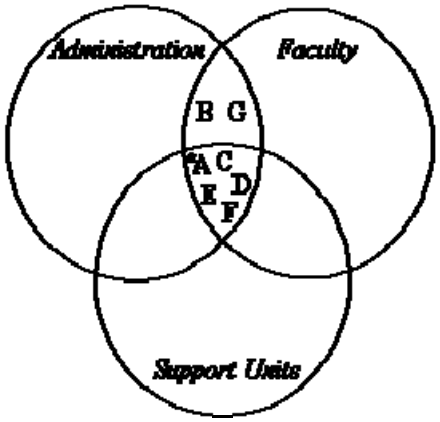
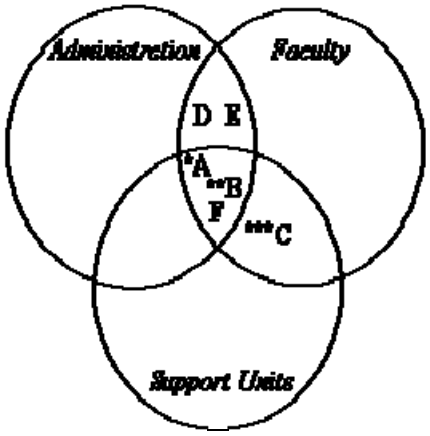


Figure 3. Weaknesses Expressed by Respondents based on Group Affiliation



A. Limited incentives, development support, and funding
B. Limited knowledge regarding copyright and intellectual property
C. Weak communication channels
D. Slow action on critical issues
E. Current technological limitations
F. Lack of skill, expertise, and desire to develop interactive DE courses
G. Loss of interaction
* *Notes prominent category for all groups*

Figure 4. Threats Expressed by Respondents based on Group Affiliation (n=42)



A. Career and job security
B. Competition from private and public institutions
C. Dependency on outside developers/programmers and security concerns
D. Quality measurement issues
E. Using old models to develop new policies
F. Misinformation on the Internet

* *Notes prominent category for Faculty*
** *Notes prominent category for Administrators*
*** *Notes prominent category for Support Units*

Based upon Rogers' attributes (2003), it was evident that respondents perceived online education technologies to have a relative advantage in terms of reaching new audiences and enhancing teaching and learning; however, because there were inadequate incentives, respondents did not perceive it as compatible with their current situation. Respondents perceived technology usage to be exceedingly complex (e.g., the technology, scheduling, and policy issues) and the trialability of the technology to be limited due to the required time and effort to change courses into electronic format. Unless a department had its own support staff, proximity to equipment in the office or

building, or other rewards through tenure/promotion, development grants, etc., the observability was non-existent. The results of this research project confirmed that all five attributes of innovation diffusion have an affect on the adoption rate of online learning at Texas A&M University. In term of methodology, the researchers used a qualitative method. In addition, they were the only researchers who examined the perceptions of three stakeholders at the same time.

Professor Annette Hyland of University of Otago in Dunedin, New Zealand conducted a research project that investigated the factors that influenced the adoption of online education by faculty members (Hyland, 2003). Unlike the four previous research projects, this one looked at how online education benefited students, from the perspective of their professors.

The population of this research project was all the full-time faculty members in the department of Theology and Religious Studies. The researcher used a qualitative method to collect her primary data for the research (Hyland, 2003). She interviewed twelve faculty members and four part-time instructors on their attitude toward online education. A constructivist methodology was used to collect the primary data. After collecting all the data, she clustered together responses with similar views and issues into common themes and sub-themes. She invited the participants to analyze the data. The results of the research covered all of the attributes of innovation, but the researcher did not explicitly mention the attributes. To the faculty members, they would adopt online education if it offers job satisfaction and enjoyment (Hyland, 2003). Feeling comfortable with the electronic technology was an important factor in motivating faculty members to teach online courses (Hyland, 2003). According to the study, the researcher discovered

that the attitude of faculty members toward online education was swayed by their aptitude for computer technology. Table 1 shows how they perceive themselves affect their attitude and behavior.

Table 1: Comparing Self-Perceptions of High- and Low-Tech Participant

High Tech Self-Perception	**Low Tech Self-Perception**
Enjoy using computer/ Internet	Find it stressful and frustrating
Like playing with computer; experimenting	Lack understanding about how it works
Part of everyday life	Use mainly at work
Attend many IT courses	Little IT training; mainly self-taught
Use wide range of applications	Restrict usage to word processing; email
Purchase state of art equipment	Raise ethical & moral issues about usage
Confident about teaching with it	Reluctant/ refuse to teach it

The researcher found that faculty members with a positive attitude toward online education used their computers for complex activities than faculty members with a negative attitude toward online education (Hyland, 2003). The length of time in using a computer did not determine the attitude of computer. It was the degree of complexity in their work that mattered. Some of them even believed that computer training would not help them. To them, the computer and Internet were just too complex for them to understand. Interestingly, they even raised ethical and moral issues in using online technology to teach their courses. Table 2 below reveals how meaningful training can minimize the effect of complexity and increase the adoption of online education.

Table 2: Links between Complexity of Participant Usage, Training and Attitude

Participants	Complexity Usage Level	Amount of IT Training	Attitude to Teaching Online
A	Low	Low	Rejections
B	Low	Low	Reservations
C	High	High	Acceptance
D	Low	Low	Rejections
E	Mid	Low	Rejections
F	Mid	Low	Reservations
G	High	High	Acceptance
H	Mid	Mid	Reservations
I	Mid-High	Mid	Acceptance
J	Mid	Low	Reservations
K	Mid-High	Mid	Acceptance
L	Low	Low	Reservations

The faculty members who held a negative view of technology did not view that it can save time and effort for them (Hyland, 2003). They needed to develop a new set of skills to teach online courses. Obviously, the skill sets required for success would be different from traditional face-to-face format. Consequently, it adversely affected their job satisfaction. In addition, they feared that the ability of online education to accommodate a vast number of students may reduce their time to research.

With these resistances, the support from staff and the institution was critical the adoption of online education (Hyland, 2003). Faculty members may be subject matter experts in their fields, but they may novices in computer competence. The training certainly can help them to teach online courses, but it was not sufficient. Trainers may know how to teach the working the software, but they do did know how teach effective teaching strategies.

This was the reason why many faculty members felt it was important for them to receive peer support (Hyland, 2003). It was vital that they have access to contact information of other faculties. They could exchange ideas or best practices to improve their respective online courses. In relation to training, they felt that they must be given time to be competent in using the software. Having a positive attitude may not motivate to teach online courses if it were not compatible with the needs, values, and past history (Hyland, 2003). One faculty member would only teach online courses if she were retiring. Two participants expressed that they were happy with the current teaching format, so change was not necessary. In addition, some of the respondents believed that the quality of education in an online environment was inferior to face-to-face instruction. They also feared that it would change the way the work. Some would be hired to do research and others would be hired to teach. They did not like the idea of separating research and teaching. To them, these two activities were interrelated. Some expressed their dislikes to communicate with students with e-mails. To them, this form of communication was too impersonal.

The faculty members who were not afraid of online technology embraced online education for reasons that positively affected their students (Hyland, 2003). They liked

the possibility of using different technologies, such blackboard and online conferencing technology, to improve teaching effectiveness. They, also, recognized that many students cannot quit their jobs to go school. Finally, the technology had the ability to expand the opportunities for students from other areas and countries to get an education. The only fear that they may had was the outsourcing of their jobs to professors of other countries. It would so much cheaper to hire professors who was off-campus because they do did require office spaces and other benefits.

The findings of this last research project agreed with the rest that adoption of online education is positively related to the attributes of relative advantage and compatibility, and negatively related to the attribute of complexity. It is the conclusion that surprised me. According to Dr. Hyland, the complexity of the education software affected how faculty members perceive the compatibility and relative advantage. This corresponded with what I stated earlier.

This research project focused the adoption of online education from the perspective of students. Dr. Aytekin Isman and Mr. Fahme Dabaj presented a paper that explored how online education has diffused in north Cyprus (Isman & Dabaj, 2005). They used Rogers (2003) theory of innovation diffusion to study the adoption rate. The four elements of innovation diffusion, which include innovation, communication channels, time, and social system, was the focus of the analysis.

For this research project, the researchers randomly sampled 100 undergraduates from Eastern Mediterranean University in Cyprus (Isman & Dabaj, 2005). 88 students were taking online courses on campus and 12 were in the two-year online education program. Because the focus of the thesis was on the attributes of an innovation, the other

three element of innovation were omitted. With online education program, Eastern Mediterranean University (EMU) was able to offer higher education to a wider audience (Isman & Dabaj, 2005). It would be very expensive for the EMU to fund new buildings to accommodate students. Consequently, many students had been rejected due to the limitation of space. Another relative advantage was that students were able to keep their jobs (Isman & Dabaj, 2005). Sixty-five of the one-hundred students maintained that it was impossible for them to not have a job. Their families depended on their income for family livelihood. The other thirty-five percent wanted to maintain their positions in the companies. Online education was compatible with most Turkish norms and social values (Isman & Dabaj, 2005). Most students who enrolled in online education programs wanted to increase their salary. Twenty-one of the participants received higher pay after completing their degrees via online education. In addition, they felt society in general was not against the idea of online education. To students, using the online technology was simple (Isman & Dabaj, 2005). They did not require any training in using the Internet and education software. Many believed that they learned as much from online courses compared to traditional face-to-face courses. The difficulty that they expressed was the nature of impersonal communication aspect. It was not possible to develop friendship with other students. Trialability was another important attribute that positively influence students to adopt online learning (Isman & Dabaj, 2005). If students liked online courses, they could continue to take them. If they did not like online courses, they could take the traditional on-campus format.

Consequently, 85 percent of the participants answered that they liked online education as an alternative to the on-campus instructions (Isman & Dabaj, 2005).

According to this research, Rogers' attributes of innovation influenced the adoption rate of online learning. Observability was the only attributes that was not mentioned in this research project. Like other researchers, they relied on a survey method to capture a snapshot of the perception at a particular moment in time. Curiously, the researchers did not go into detail like the other researchers mentioned in the literature review regarding their methodology. Therefore, it would be very difficult to determine the reliability and validity of the findings.

Research related to the dependent variable

The adoption rate of an innovation is the dependent variable. Rogers (2003) defined "rate of adoption is the relative speed with which an innovation is adopted by members of a social system" (p.221). It is commonly measured by the number of people who have adopted an innovation is specific time frame. There are two ways to measure the rate of adoption of innovation. One way is to measure the numbers of people who have adopted and rejected an innovation. The drawback with this method is that it is very difficult to conduct a correlation analysis in a single study. The other way is to measure the relative speed it takes an individual or individuals to adopt an innovation. With this method, researchers are able to perform correlation analysis in a single study. The drawback with this method is that the accuracy of the answers is questionable. This is especially true when participants are asked to recall adoption that occurred years ago.

Research related to the relationships among the variables

Universities around the world are integrating online education technology. Professors either use the technology as an add-on to their classes or use the technology to

create a stand-alone online course. Regardless of the application, online education will become a common learning experience for students. The six research articles provided valuable findings for university administrators and professors who are responsible for setting up online courses. All the strategies and tactics will revolve around Rogers' five attributes of innovation diffusion. All of the research articles have indicated that relative advantage, compatibility, and complexity are the influential attributes to the adoption of online teaching by professors.

For professors who have embraced online education, they were motivated by ability of the technology to expand the opportunity to more students. They, also, claimed that it save them time in course preparation. Students can gain access to materials from anywhere and anytime. In addition, professors can enjoy the benefits of either owning or sharing the rights of intellectual property. Cost was not an important factor because they receive funding from schools. For professors who do embrace online technology, they did not see any relative advantage. They believe students will get an inferior academic experience. Some even fear that they will lose their jobs to other professors from other countries.

Compatibility is another important factor. For the professors who see the relative advantage of online education, they believe the technology is compatible with their values. They are able to experiment with different technologies to improve their teaching effectiveness. The technology allows them to do other things and in other places. They like the idea to be able to conduct research in another place, while be able to teach. For professors who feel the technology is not compatible with their values, it degrades the quality of higher education. They feel that they lose the personal connection with their

students. Finally, they feel that online education will change the way they work. University administrators will hire professors for research and others for teaching. Many feel research is the key to promotion and personal growth. For the professors who adopted online education, they did not perceive the technology is complex. These are the people who use computers and its applications for complex matters. On the other hand, the professors who did not adopt online education find the technology to be complex, even frightening. Many of them just use the computers for simple matters. They do not go beyond using word processing software and emails.

Trialability and observability seemed not to be important attributes in the diffusion of online education. Only the first research article found these two variables to be significant. Not much research have been done on how Rogers' five attributes of innovation influence the adoption rate of online education by students. After searching for hundreds of articles, I was only able to find a few. There is only one article is in the literature review. The students in Cyprus enthusiastically adopted online learning. They saw the relative of taking online courses over traditional format. By taking online courses, they did not have to give up their jobs. Their families relied on their incomes for sustaining their livelihood.

The students feel that online learning is compatible with their socio-cultural values, needs, and past history. After graduation from the online degree program, many of them saw their pay increase. Many of them even received promotion. Employers did not perceived online learning to be substandard education. In term of complexity, students did not find the technology to be difficult to use. Actually they enjoyed using

the software to interact and learn. It can be argued that simplicity of the software helped with the adoption rate.

It seemed like trialability was a factor. Students were given the opportunity to drop the online course to take a traditional face-to-face course if it does not work out. The article did not mention anything about the attribute of observability. So, I assume that it was not a factor the adoption of online learning by the students.

Significance of proposed research to previous literature

The findings from Rogers' *Innovation Diffusion* book and six research articles indicated survey is the most common method used to collect primary data. Interviews and observations were also made in the primary data collection process, but it will not be part of this research.

Initially, to measure the adoption rate, each participant was asked to recall the length of time it took to sign up or teach his or her first an online course. This type of measurement would be problematic because it would be very difficult for participants to accurately recall their memory. Archival documents of their enrollment would be required to verify their answers, and it was not possible due to institutional constraints. Instead, participants were asked to answer whether they have taken or taught online courses.

The survey was designed to collect and measure of the responses on all five attributes of an innovation. It is despite the fact that in all of the research articles, not all five of the attributes are either positively or negatively related to the adoption rate of online education.

I changed my target population for the research project. Initially, I planned to survey only the students taking OC courses. Now, I surveyed the professors and students in the College of Professional Studies. Most of the existing research projects focused on the adoption of online learning by professors. I did find a few that focused from the perspective of students. However, I did not, from my literature review process, any research effort that has compared between college students and professors.

The various methodologies mentioned in the articles influenced my own. They all used survey to collect primary data. One researcher spelled out the strategy to have a high return rate on the survey. I attempted to develop a similar plan to achieve this type of survey results.

Chapter 3 – Methodology

Description of the research design

All the research activities in this chapter were subordinated to the problem statement and four hypotheses. The activities went from deciding on the population; choosing a technique to sample it; minimizing the entrance of bias into the study; developing a valid and reliable method of collecting the primary data; and then actually collecting, recording, organizing, and analyzing it all.

Description of how variables will be measured

The responses of “strongly disagree” and “disagree” were categorized as negative. On the other hand, the responses of “disagree” and “strongly agree” were categorized as positive. For the independent variables, at least 50 percent of the sample respondents must either combined from “strongly disagree” and “disagree” or “agree” and “strongly agree” to determine whether it not support or support a hypothesis. In addition to the percentage distribution, the sample mean was used to establish the relationship. The combined ranks of 1 to 2 were considered to be negatively related. The combined ranks of 4 to 5 were considered to be positively related.

It was necessary to use both measurements to determine the relationship. The analysis could be inaccurate because of the skewness. A sample of 3.5 seems to suggest a positive relationship between the independent and dependent variables. By including the frequency distribution, it may reveal that a significant number of responses were concentrated on rank 3 or no opinion and some responses in 4 or 5. By looking the frequency distribution and the sample mean for each sub-dimension and attribute, an accurate analysis and conclusion can be made.

Population to be studied

Descriptions of the population. The populations for this research project consisted of two stakeholders in the College of Professional Studies. The first stakeholder of the population was graduate students in the four programs. These four programs were the Master of Science in Information Systems (MSIS), Master of Arts of Organizational Change (MAOC), Master of Arts in Global Leadership (MAGL), and Master of Arts in Human Resource Management (MAHRM). All four of these programs have been designed to include at least one course from each program. A student in the Organizational Change program is required to take two courses from the MSIS and MAGL programs.

The second stakeholder of the population was the faculty members in the College of Professional Studies. They were divided into full-time and adjunct faculties. For the most part, faculty members in one program did not teach courses in other programs. A few faculty members who have diverse academic and professional backgrounds did teach courses in two different programs.

Relevance of the population to the PS/H. The relevance of the population to the PS/H was the structure of the online courses in the College of Professional Studies. In this college, there were four graduate programs. They included the Master of Arts in Organizational Change, Master of Arts in Human Resource Management, Master of Arts in Global Leadership, and Master of Science in Information Systems. Faculty members in each program had certain discretions such as the format of the research paper or grading guidelines, but there were many similarities. It was especially true for the Organizational Change and Global Leadership.

In these two programs, faculty members constructed their online courses in a 10 unit framework. From unit one to unit six, students were required to read one book and to engage in a virtual team discussion in a sequential manner. The next three units involved the writing and presenting of a research paper. The formats of the research paper for both programs were very comparable. The last unit was the final exam. Students in both programs earned either failing grade of 0 or passing grade of 1.

Regardless, the online courses of these four programs were structured within a reading, discussion, and application model. The method of instruction was in the asynchronous format. This format was appropriate because professors and students were in different time and space (Gorelick, Milton, & April, 2004).

Description of sampling methods

Process for obtaining a sample. The problem discussed in chapter one was investigated using data from two samples of faculty members and graduate students who are in the College of Professional Studies. The collection of the two samples was appropriate for this study for the following reasons: (1) many faculty members and graduate students in this college have enrolled in online courses; and (2) the direction was to have more courses being offered online.

Every person in the two populations had equal access to the survey link regardless whether he or she was taking an online course or face-to-face course. The combined number of students who enrolled in the four programs was only approximately 500 students. A minimum of 250 students of the population was needed for stakeholder one. As for the stakeholder two of 42 to 43 faculty members, the entire population was

sampled. The result from a survey would be questionable if the responds were less than 30 percent (Weiss, 2002).

The result may suffer from a situation known as self-selection. It meant that the survey responses came from people who had an agenda or personal incentive to participate. A minimum of 75 responses from students 12 to 13 from faculty members were needed to avoid this bias. In addition, the minimum sample from each group provided the basis to determine the sampling error.

Nature of the sample. It was important to acknowledge that the two samples were collected with a nonprobability sampling method. The method employed to collect the samples was the purposive sampling. In this method, the population was chosen for a particular purpose.

Description of data collection methods and instruments

Overview. The data collection method encompassed two principal steps. The first step in the data collection method was preparing for the research tools. After having all the necessary tools in place, it was possible to begin the data collection process. This step required the administration of a pilot test of the survey to a small sample of people before administering the actual survey.

Research tools. Because the objective of this research project was to measure the perception of students and faculty members, it was critical to use research tools that can effectively reach them. The Internet, electronic mails, and the survey itself were the primary tools.

Internet access was the first requirement in order to administer the surveys. It was not an issue because both the researcher and potential participants had Internet access.

Every individual that enrolled in the Summer II session was entitled to complimentary wireless and traditional Internet access. Besides, the prices of commercial basic Internet were affordable to students.

The other critical research tool was the Internet survey. SurveyMonkey.com was the company of choice to provide the tool to administer the survey for two reasons. First, the price was affordable. The company charged only $20 per month, without any long-term agreement. Second, the interface design was quite simple to navigate. Potential participants just need only to click on the link to answer the survey questions. Once a participant completed all the questions, the results would be electronically mailed to the researcher for analysis.

The survey contained three essential components: introduction, instructions, and confidentiality. The potential participants were informed the purpose of the survey. In addition, they received instructions in correctly completing the surveys. The participation in this survey was entirely voluntary on the part of the participants. They had the right to decline or discontinue taking the survey at anytime.

The survey did not ask for any personal information from the potential participants. Surely, names and any information that would identify the identity were not included. For analysis purpose, they were requested to identify their program of study. The anonymity of the potential participants was important of the researcher. No one had access to the individual responses except for the researcher himself. The Dean and the Chairperson of each respective program would be likely interest in reading the results, but they only had access to the total responses.

The survey only contained 23 questions for potential participants to complete. 21 out of the 23 questions revolved around the dependent variable and the five independent variables. The first question pertained to the dependent variable of adoption rate. Questions 2 to 7 pertained to the six subdimensions of relative advantage. Next, questions 8 to 11 pertained to the four subdimensions of compatibility. Then, questions 12 to 14 pertained to the three subdimensions of complexity. Following, questions 15 to 17 pertained to the three subdimensions of trialability. Finally, questions 18 to 21 pertained to the subdimensions of observability. Question 22 seek to ascertain whether graduate students would continue or discontinue taking more online courses or faculty members would continue or discontinue teaching more online courses. The final question in the survey pertained to the program of study that each adopter was in.

Research collection process. The data collection method followed a linear process, from pilot test to the actual collection process, to maximize the completion rate. In addition, the process was conducted in accordance with three principles. These three principles included opinion leadership, the attribute of complexity, and mass and interpersonal communication channels. Before elaborating on the data collection process, it was important to briefly discuss the principle of "opinion leadership."

Opinion leaders are people in a social system that has tremendous social influence on others (Rogers, 2003). They play a critical role in positively affecting the diffusion of an innovation. There are seven characteristics that distinguish between opinion leaders and followers (Rogers, 2003). The characteristics are that opinion leaders (1) have more exposure to mass media than their followers, (2) are more cosmopolite than their followers, (3) have greater contact with change agents than their followers, (4) have

greater social participation than their followers, (5) have greater socio-economic status than their followers, (6) are more innovative than their followers, (7) the innovativeness of opinion leaders is affected by their social system's norms.

The first step in the data collection process was to conduct a pilot study. For this research project, the researcher conducted two pilot tests. The objectives were to assess the experience of completing the surveys by participants. The feedback was exclusively from students, and not from faculty members.

The first pilot study was conducted by leveraging the Internet. All the students who are taking the PSOC7200 course received an electronic mail that contained an Internet link to the survey. Eight out of ten students completed the surveys. One participant complained that he experienced a minor technical difficulty with one of the survey questions. To obtain detail feedback to the survey, the researcher physically approached potential participants.

The second pilot study was conduct to with face-to-face interaction. The researcher approached eight students in HPU at the downtown campus. Each student was asked to complete the survey. After completing the survey, he or she was asked to share his or her experience. The primary concerns were with the clarity of the questions and the length. For the most part, the responses to the length of the survey were appropriate. Three participants felt a few of the questions were confusing.

The second step in the data collection process was to collect the primary data itself. In this step, the two actual stakeholders of the population were sampled. The strategy for obtaining the survey responses was the same for both the graduate students and faculty members in the College of Professional Studies.

Professors at Hawaii Pacific University (HPU) certainly were qualified to be opinion leaders of their students. Professors certainly possessed most of the characteristics mentioned above. Most important, they had access to their classes. Because of their position as instructors and of their vast knowledge and impressive expertise, they should be able to command the ears of students.

The Dean of College of Professional Studies, Dr. Gordon Jones, was no doubt an opinion leader. He was asked to assist in the distribution of the survey link to sample of the second stakeholder. The researcher personally asked for his help in distributing the Internet survey link to his program chairpersons. In turn, each program chair electronically distributed the link to his or her faculty members.

The data collection process involved two stages. The first stage involved in the collecting of survey responses from faculty members teaching and students taking courses in the College of Professional Studies with the personal interaction method. The second stage involved in the collecting of survey responses with the interactive method.

The researcher spent two weeks to administer the survey from one class at time. During that time, students and faculty members in eight MSIS classes and one MAOC class participated in the survey. Fifty-seven students and four faculty members responded.

Potential respondents completed the questionnaire in a classroom setting. The questionnaire was two-page in length with 23 questions. The purpose, instruction, and rights will be explained verbally as well as in printed form at the beginning in every session. Respondents were informed that the questions were about their own perceptions of online education. They were assured of anonymity and confidentiality of their

responses and they were told that the session would take no more than five minutes. At the end, respondents were asked to sign a written consent form before completing their survey.

After a few days, the researcher began the second stage of the data collection process. It involved the distribution of the survey link to the four program chairs. In turn, each program chair distributed the link to their faculty members. Twenty students and eight faculty members responded to the survey.

Data sources. The source of data was the responses of the survey from the students and faculty members. The objective was to capture and measure their perception of online education in the context of Rogers' five main attributes of innovation diffusion.

Methods for data analysis

Statistical methods to test PS/H. Two factors have determined the appropriate statistical methods to be used for testing the four hypotheses. The first factor was whether the variables were continuous or discrete. The appropriate statistical method would be descriptive statistics because both the dependent variable and independent variables are discrete (Newton & Rudestam, 1999).

The primary data was input into the Microsoft Excel program and began a frequency analysis with tables. The results generated a percentage of respondents that answered strongly disagree, disagree, no opinion, agree, and strongly agree in a frequency chart. A histogram was created to represent a visualization of modes.

In addition to conducting a frequency distribution, sample means for each attribute and its sub-dimensions was generated. It was accomplished with the descriptive statistics function in Microsoft. Besides the sample means, this function provided data on

the standard deviation to determine the confidence interval level. The purpose to ascertain the range of the population means (Barlow, 2005).

Biases in the research project

All social science researches contain personal bias in its content and research methodology. It is critical for a researcher to honestly and openly identify it to readers. Any acts of concealment may gravely damage the reputation of a researcher and invalid his or her research project (Leady & Ormrod, 2005). Because diffusion research has been extensively conducted in the social science community, researchers identified two biases (Rogers, 2003).

The first bias is the pro-innovation bias that many innovation diffusion researchers and change agents have with their innovations (Rogers, 2003). They consciously assume that their innovations are beneficial to the targeted social systems because the innovations have benefited them. This pro-innovation bias has its origin in the ethno-centric thinking of the sub-conscious minds. Ethnocentrism is belief of cultural superiority of one culture over another (Adler, 2002 & Triandis, 2004). Naturally, one would use his or her own culture as the standard to judge other cultures. There is a tendency for people with ethnocentric thinking to change others to be like themselves. Any modification by adopters to the innovations is discouraged.

To address this problem, the researcher raised the issue of discontinuance in innovation diffusion. A question in the survey asked whether the respondents will or will not continue to take or teach additional online courses in the future. Possibly, the responses with a high rate of discontinuance from students and/ or faculty members could force school administrators to reevaluate their push to offer online courses. What are

advantageous and compatible to the goals and needs of faculty members may not be the same to the students.

The second bias is the individual-blame orientation that researchers and change agents hold with them (Rogers, 2003). When the adoption rate of an innovation does not reach critical mass, they often blame individuals in the social system. For the most part, the behavior of an individual is influenced by the dynamic interactions of the social system that he or she is in. By not taking into account the influence of systems, any social change will be only temporary. According to Anderson and Johnson (1997), a system is assemblage of interacting, interrelated, or interdependent parts that form a complex and cohesive whole. To overcome the individual-blame orientation, the research emphasized the students or faculty members as wholes.

In addition to these two biases, the diffusion researcher faced another problem. It has to do with the degree of accuracy in the ability of respondents to accurately recollect their memory (Rogers, 2003). It would be advantageous to quantitatively measure the speed of adopters in adopting online education. Unfortunately, it was too difficult to accurately measure because access to records were not possible. Consequently, the only way for this research not to suffer from this problem was to ask open-ended questions.

The sampling method of this research project probably would not produce results that were representative of the population, but it did not suffer from the bias of self-selection. The responses from both samples were above the minimum 30 percent requirement. People who participated in the survey did not only include the ones that have a personal agenda to either influence the direction of this research due to their preference for online education.

Chapter 4 – Data Presentation and Analysis

Brief restatement of research methods

Introduction. Chapter Four provides the data presentation and analysis for this research project. Data presentation in Chapter Four is based on the research method described in Chapter Three of the data analysis section. The data presentation shows the primary data collected from 77 graduate students and 12 faculty members in the College of Professional Studies in the Summer II session. The primary objective of this chapter is to either support or not support the four hypotheses articulated in Chapter One. The data includes the five attributes and the adoption rates. In addition, three more analyses were conducted on: (1) the number of online courses that students have taken and faculty members have taught, (2) the likelihood that students will take and faculty members will teach online courses in the future, (3) the degree program (s) that students and faculty members are in. These findings can be found in the appendix section. The final section of Chapter Four concludes with a summary to provide for the analyses in Chapter Five.

Data presentation. To determine the influence of Rogers' five attributes of innovation diffusion on the adoption rates of online education by students and faculty members in the College of Professional Studies, two sample populations of students and faculty members were collected with a survey. The survey questions are Likert-type questions with five options to choose from. The first 21 questions in the survey measured the perception of the five attributes and its sub-dimensions of online education. The five attributes are: relative advantage, compatibility, complexity, trialability, and observability.

The data (Tables and Figures 4-1 to 4-107) presents the responses of the attributes to online education in a frequency format starting with relative advantage, compatibility, complexity (simplicity), trialability and observability. For each attribute, a series of sub-dimensions are broken down. The results for the attributes of innovation diffusion of students who have taken online courses are presented in Tables and Figures 4-1 to 4-26. Next, the results for the attributes of innovation diffusion of students who have not taken online courses are presented in Tables and Figures 4-27 to 4-53. Then, the results for the attributes of innovation diffusion of faculty members who have taught online courses are presented in Tables and Figures 4-54 to 4-80. Finally, the results for the attributes of innovation diffusion of faculty members who have not taught online courses are presented in Tables and Figures 4-81 to 4-107.

Two colors, red and blue, were chosen to distinguish between the sub-dimensions and the attributes for the histogram charts. The histogram charts that have red bars represent the results of the sub-dimensions. On the other hand, the histogram charts that have blue bars represent the results of the attributes.

To aid with the analysis, Tables 4-108 to 4-111 were created that contain results of the attributes for students and faculty members. In addition to frequency distribution, it also contains the sample means, standard deviation, and the confidence level. The frequency distribution and sample means were the basis to determine the relationship between the independent variables and dependent variable.

Presentation of findings

Students Who Have Taken Online Courses

Table 4-1 Relative Advantage (Economic Profitability)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	4	8%
2	Disagree	15	31%
3	No opinion	11	23%
4	Agree	12	25%
5	Strongly agree	6	13%

Table 4-2 Relative Advantage (Saving of Time)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	10%
2	Disagree	19	40%
3	No opinion	5	10%
4	Agree	13	27%
5	Strongly agree	6	13%

Table 4-3 Relative Advantage (Reduced Discomfort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	10%
2	Disagree	13	27%
3	No opinion	12	25%
4	Agree	18	38%
5	Strongly agree	0	0%

Table 4-4 Relative Advantage (Immediacy of Reward)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	4%
2	Disagree	15	31%
3	No opinion	7	15%
4	Agree	24	50%
5	Strongly agree	0	0%

Table 4-5 Relative Advantage (Saving of Effort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	2%
2	Disagree	0	0%
3	No opinion	4	8%
4	Agree	28	58%
5	Strongly agree	15	31%

Table 4-6 Relative Advantage (Low Initial Cost)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	6	13%
2	Disagree	15	31%
3	No opinion	16	33%
4	Agree	9	19%
5	Strongly agree	2	4%

Table 4-7 Relative Advantage

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	23	8%
2	Disagree	77	27%
3	No opinion	55	19%
4	Agree	104	36%
5	Strongly agree	29	10%

Table 4-8 Compatibility (Need of Adopters)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	4%
2	Disagree	6	13%
3	No opinion	12	25%
4	Agree	25	52%
5	Strongly agree	3	6%

Table 4-9 Compatibility (Cultural Values & Beliefs)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	2%
2	Disagree	7	15%
3	No opinion	25	52%
4	Agree	15	31%
5	Strongly agree	0	0%

Table 4-10 Compatibility (Past Experience)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	4%
2	Disagree	26	54%
3	No opinion	11	23%
4	Agree	9	19%
5	Strongly agree	0	0%

Table 4-11 Compatibility (Name)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	6	13%
3	No opinion	13	27%
4	Agree	26	54%
5	Strongly agree	3	6%

Table 4-12 Compatibility

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	3%
2	Disagree	45	23%
3	No opinion	61	32%
4	Agree	75	39%
5	Strongly agree	6	3%

Table 4-13 Simplicity (Use-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	13	27%
3	No opinion	10	21%
4	Agree	20	42%
5	Strongly agree	5	10%

Table 4-14 Simplicity (Use-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	6	13%
3	No opinion	11	23%
4	Agree	26	54%
5	Strongly agree	5	10%

Table 4-15 Simplicity (Understanding)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	10	21%
3	No opinion	5	10%
4	Agree	27	56%
5	Strongly agree	6	13%

Table 4-16 Simplicity

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	29	20%
3	No opinion	26	18%
4	Agree	73	51%
5	Strongly agree	16	11%

Table 4-17 Trialability (Installment Basis)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	10%
2	Disagree	8	17%
3	No opinion	13	27%
4	Agree	14	29%
5	Strongly agree	8	17%

Table 4-18 Trialability (Ease of Trying)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	2	4%
3	No opinion	8	17%
4	Agree	30	63%
5	Strongly agree	8	17%

Table 4-19 Trialability (Re-Invention)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	4	8%
3	No opinion	24	50%
4	Agree	18	38%
5	Strongly agree	2	4%

Table 4-20 Trialability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	3%
2	Disagree	14	10%
3	No opinion	45	31%
4	Agree	62	43%
5	Strongly agree	18	13%

Table 4-21 Observability (Observation-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	13	27%
3	No opinion	11	23%
4	Agree	19	40%
5	Strongly agree	5	10%

Table 4-22 Observability (Observation-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	2%
2	Disagree	14	29%
3	No opinion	25	52%
4	Agree	7	15%
5	Strongly agree	1	2%

Table 4-23 Observability (Observation-3)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	4	8%
2	Disagree	13	27%
3	No opinion	12	25%
4	Agree	18	38%
5	Strongly agree	1	2%

Table 4-24 Observability (Observation-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	3%
2	Disagree	40	28%
3	No opinion	48	33%
4	Agree	44	31%
5	Strongly agree	7	5%

Table 4-25 Observation (Describing)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	4%
2	Disagree	7	15%
3	No opinion	9	19%
4	Agree	27	56%
5	Strongly agree	3	6%

Table 4-26 Observability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	7	4%
2	Disagree	47	24%
3	No opinion	57	30%
4	Agree	71	37%
5	Strongly agree	10	5%

Students Who Have Not Taken Online Courses

Table 4-27 Relative Advantage (Economic Profitability)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	3%
2	Disagree	8	28%
3	No opinion	9	31%
4	Agree	7	24%
5	Strongly agree	4	14%

Table 4-28 Relative Advantage (Saving of Time)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	3	10%
2	Disagree	6	21%
3	No opinion	15	52%
4	Agree	3	10%
5	Strongly agree	2	7%

Table 4-29 Relative Advantage (Reduced Discomfort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	3	10%
2	Disagree	9	31%
3	No opinion	8	28%
4	Agree	5	17%
5	Strongly agree	4	14%

Table 4-30 Relative Advantage (Immediacy of Reward)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	3%
2	Disagree	12	41%
3	No opinion	9	31%
4	Agree	6	21%
5	Strongly agree	1	3%

Table 4-31 Relative Advantage (Saving of Effort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	7	24%
4	Agree	15	52%
5	Strongly agree	7	24%

Table 4-32 Relative Advantage (Low Initial Cost)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	7%
2	Disagree	5	17%
3	No opinion	15	52%
4	Agree	5	17%
5	Strongly agree	2	7%

Table 4-33 Relative Advantage

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	10	6%
2	Disagree	40	23%
3	No opinion	63	36%
4	Agree	41	24%
5	Strongly agree	20	11%

Table 4-34 Compatibility (Need)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	10	34%
3	No opinion	7	24%
4	Agree	11	38%
5	Strongly agree	1	3%

Table 4-35 Compatibility (Cultural Values)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	3%
2	Disagree	5	17%
3	No opinion	18	62%
4	Agree	5	17%
5	Strongly agree	0	0%

Table 4-36 Compatibility (Past Experience)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	17%
2	Disagree	12	41%
3	No opinion	12	41%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-37 Compatibility (Name)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	3%
2	Disagree	9	31%
3	No opinion	10	34%
4	Agree	7	24%
5	Strongly agree	2	7%

Table 4-38 Compatibility

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	7	6%
2	Disagree	36	31%
3	No opinion	47	41%
4	Agree	23	20%
5	Strongly agree	3	3%

Table 4-39 Simplicity (Use-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	9	31%
3	No opinion	13	45%
4	Agree	7	24%
5	Strongly agree	0	0%

Table 4-40 Simplicity (Use-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	7%
2	Disagree	4	14%
3	No opinion	17	59%
4	Agree	6	21%
5	Strongly agree	0	0%

Table 4-41 Simplicity (Use-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	3%
2	Disagree	13	22%
3	No opinion	30	52%
4	Agree	13	22%
5	Strongly agree	0	0%

Table 4-42 Simplicity (Understanding)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	7%
2	Disagree	4	14%
3	No opinion	17	59%
4	Agree	6	21%
5	Strongly agree	0	0%

Table 4-43 Simplicity

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	4	5%
2	Disagree	17	20%
3	No opinion	47	54%
4	Agree	19	22%
5	Strongly agree	0	0%

Table 4-44 Trialability (Installment Basis)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	3	10%
3	No opinion	18	62%
4	Agree	6	21%
5	Strongly agree	2	7%

Table 4-45 Trialability (Ease of Trying)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	3%
3	No opinion	6	21%
4	Agree	15	52%
5	Strongly agree	7	24%

Table 4-46 Trialability (Re-Invention)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	3	10%
3	No opinion	17	59%
4	Agree	7	24%
5	Strongly agree	2	7%

Table 4-47 Trialability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	7	8%
3	No opinion	41	47%
4	Agree	28	32%
5	Strongly agree	11	13%

Table 4-48 Observability (Observation-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	4	14%
3	No opinion	13	45%
4	Agree	12	41%
5	Strongly agree	0	0%

Table 4-49 Observability (Observation-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	3%
2	Disagree	5	17%
3	No opinion	14	48%
4	Agree	9	31%
5	Strongly agree	0	0%

Table 4-50 Observability (Observation-3)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	3%
3	No opinion	12	41%
4	Agree	13	45%
5	Strongly agree	3	10%

Table 4-51 Observability (Observation-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	1%
2	Disagree	10	11%
3	No opinion	39	45%
4	Agree	34	39%
5	Strongly agree	3	3%

Table 4-52 Observability (Describing)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	5	17%
3	No opinion	8	28%
4	Agree	16	55%
5	Strongly agree	0	0%

Table 4-53 Observability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	1%
2	Disagree	15	13%
3	No opinion	47	41%
4	Agree	50	43%
5	Strongly agree	3	3%

Faculty Members Who Have Taught Online Courses

Table 4-54 Relative Advantage (Economic Profitability)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	10%
3	No opinion	4	40%
4	Agree	4	40%
5	Strongly agree	1	10%

Table 4-55 Relative Advantage (Saving of Time)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	50%
2	Disagree	5	50%
3	No opinion	0	0%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-56 Relative Advantage (Reduced Discomfort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	50%
2	Disagree	2	20%
3	No opinion	2	20%
4	Agree	0	0%
5	Strongly agree	1	10%

Table 4-57 Relative Advantage (Immediacy of Reward)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	20%
2	Disagree	4	40%
3	No opinion	1	10%
4	Agree	1	10%
5	Strongly agree	2	20%

Table 4-58 Relative Advantage (Saving of Effort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	2	20%
3	No opinion	0	0%
4	Agree	4	40%
5	Strongly agree	3	30%

Table 4-59 Relative Advantage (Low Initial Cost)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	3	30%
3	No opinion	4	40%
4	Agree	2	20%
5	Strongly agree	0	0%

Table 4-60 Relative Advantage

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	14	23%
2	Disagree	17	28%
3	No opinion	11	18%
4	Agree	11	18%
5	Strongly agree	7	12%

Table 4-61 Compatibility (Need of Adopters)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	3	30%
3	No opinion	2	20%
4	Agree	2	20%
5	Strongly agree	3	30%

Table 4-62 Compatibility (Cultural Values)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	2	20%
3	No opinion	5	50%
4	Agree	2	20%
5	Strongly agree	1	10%

Table 4-63 Compatibility (Past Experience)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	6	60%
3	No opinion	1	10%
4	Agree	2	20%
5	Strongly agree	1	10%

Table 4-64 Compatibility (Name)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	0	0%
4	Agree	8	80%
5	Strongly agree	2	20%

Table 4-65 Compatibility

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	11	28%
3	No opinion	8	20%
4	Agree	14	35%
5	Strongly agree	7	18%

Table 4-66 Simplicity (Use-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	4	40%
3	No opinion	0	0%
4	Agree	3	30%
5	Strongly agree	3	30%

Table 4-67 Simplicity (Use-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	4	40%
3	No opinion	1	10%
4	Agree	3	30%
5	Strongly agree	1	10%

Table 4-68 Simplicity (Use-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	5%
2	Disagree	8	40%
3	No opinion	1	5%
4	Agree	6	30%
5	Strongly agree	4	20%

Table 4-69 Simplicity (Understanding)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	3	30%
3	No opinion	4	40%
4	Agree	2	20%
5	Strongly agree	0	0%

Table 4-70 Simplicity

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	7%
2	Disagree	11	37%
3	No opinion	5	17%
4	Agree	8	27%
5	Strongly agree	4	13%

Table 4-71 Trialability (Installment Basis)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	20%
2	Disagree	3	30%
3	No opinion	1	10%
4	Agree	4	40%
5	Strongly agree	0	0%

Table 4-72 Trialability (Ease of Trying)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	3	30%
2	Disagree	6	60%
3	No opinion	1	10%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-73 Trialability (Re-Invention)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	10%
3	No opinion	1	10%
4	Agree	7	70%
5	Strongly agree	1	10%

Table 4-74 Trialability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	5	17%
2	Disagree	10	33%
3	No opinion	3	10%
4	Agree	11	37%
5	Strongly agree	1	3%

Table 4-75 Observability (Observation-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	1	10%
3	No opinion	1	10%
4	Agree	6	60%
5	Strongly agree	1	10%

Table 4-76 Observability (Observation-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	1	10%
3	No opinion	4	40%
4	Agree	3	30%
5	Strongly agree	1	10%

Table 4-77 Observability (Observation-3)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	10%
2	Disagree	2	20%
3	No opinion	2	20%
4	Agree	4	40%
5	Strongly agree	1	10%

Table 4-78 Observability (Observation-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	3	10%
2	Disagree	4	13%
3	No opinion	7	23%
4	Agree	13	43%
5	Strongly agree	3	10%

Table 4-79 Observability (Describing)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	2	20%
3	No opinion	4	40%
4	Agree	4	40%
5	Strongly agree	0	0%

Table 4-80 Observability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	3	8%
2	Disagree	6	15%
3	No opinion	11	28%
4	Agree	17	43%
5	Strongly agree	3	8%

Faculty Who Have Not Taught Online Courses

Table 4-81 Relative Advantage (Economic Profitability)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-82 Relative Advantage (Saving of Time)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-83 Relative Advantage (Reduced Discomfort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-84 Relative Advantage (Immediacy of Reward)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	50%
2	Disagree	0	0%
3	No opinion	0	0%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-85 Relative Advantage (Saving of Effort)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	1	50%

Table 4-86 Relative Advantage (Low Initial Cost)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	1	50%

Table 4-87 Relative Advantage

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	2	17%
2	Disagree	2	17%
3	No opinion	4	33%
4	Agree	3	25%
5	Strongly agree	1	8%

Table 4-88 Compatibility (Need of Adopters)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-89 Compatibility (Current Values)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	2	100%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-90 Compatibility (Past Experience)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	1	50%

Table 4-91 Compatibility (Name)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	0	0%
4	Agree	1	50%
5	Strongly agree	1	50%

Table 4-92 Compatibility

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	4	50%
4	Agree	2	25%
5	Strongly agree	2	25%

Table 4-93 Simplicity (Use-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	1	50%

Table 4-94 Simplicity (Use-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-95 Simplicity (Use-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	25%
3	No opinion	2	50%
4	Agree	0	0%
5	Strongly agree	1	25%

Table 4-96 Simplicity (Understanding)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-97 Simplicity

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	2	33%
3	No opinion	3	50%
4	Agree	0	0%
5	Strongly agree	1	17%

Table 4-98 Trialability (Installment Basis)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	2	100%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-99 Trialability (Ease of Trying)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-100 Trialability (Re-Invention)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	1	50%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-101 Trialability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	0	0%
3	No opinion	4	67%
4	Agree	2	33%
5	Strongly agree	0	0%

Table 4-102 Observability (Observation-1)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-103 Observability (Observation-2)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-104 Observability (Observation-3)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	1	50%
3	No opinion	1	50%
4	Agree	0	0%
5	Strongly agree	0	0%

4-105 Observability (Observation-Combined)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	0	0%
2	Disagree	3	50%
3	No opinion	3	50%
4	Agree	0	0%
5	Strongly agree	0	0%

Table 4-106 Observability (Describing)

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	50%
2	Disagree	0	0%
3	No opinion	0	0%
4	Agree	1	50%
5	Strongly agree	0	0%

Table 4-107 Observability

Rank	Degree of agreement	Frequency	Relative Frequency
1	Strongly disagree	1	13%
2	Disagree	3	38%
3	No opinion	3	38%
4	Agree	1	13%
5	Strongly agree	0	0%

Student and Faculty Member Samples

Students	Number	Relative Frequency
Have taken online courses	48	62%
Have not taken online courses	29	38%
Total	77	100%

Faculty Members	Number	Relative Frequency
Have taught online courses	10	83%
Have not taught online courses	2	17%
Total	12	100%

Students Who Have Taken Online Courses

Figure 4-1 Relative Advantage (Economic Profitability)

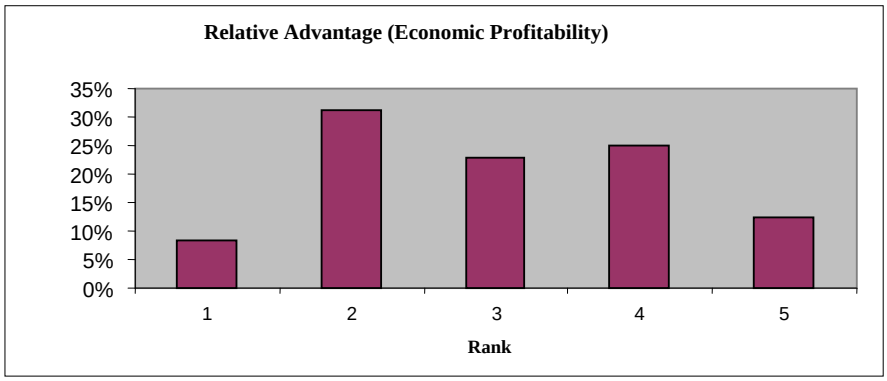


Figure 4-2 Relative Advantage (Saving of Time)

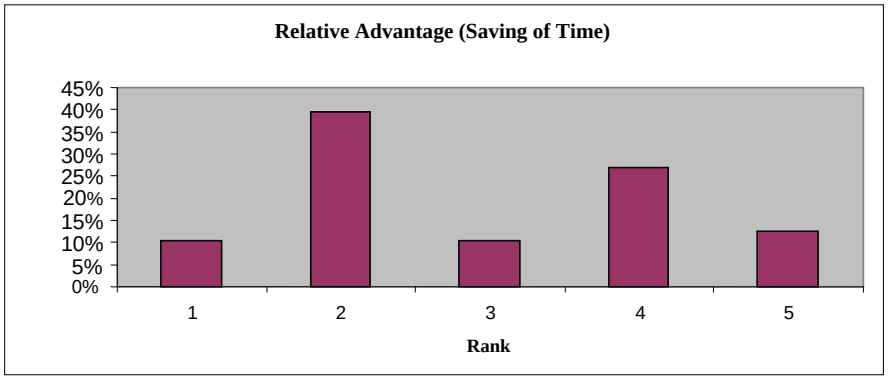


Figure 4-3 Relative Advantage (Reduced Discomfort)

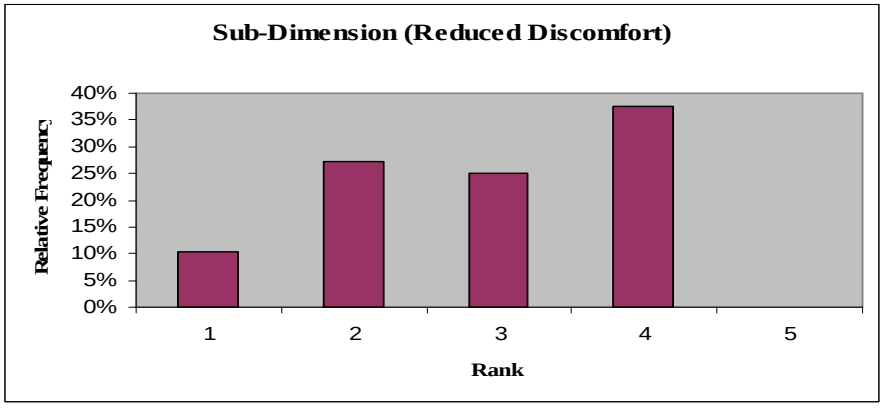


Figure 4-4 Relative Advantage (Immediacy of Reward)

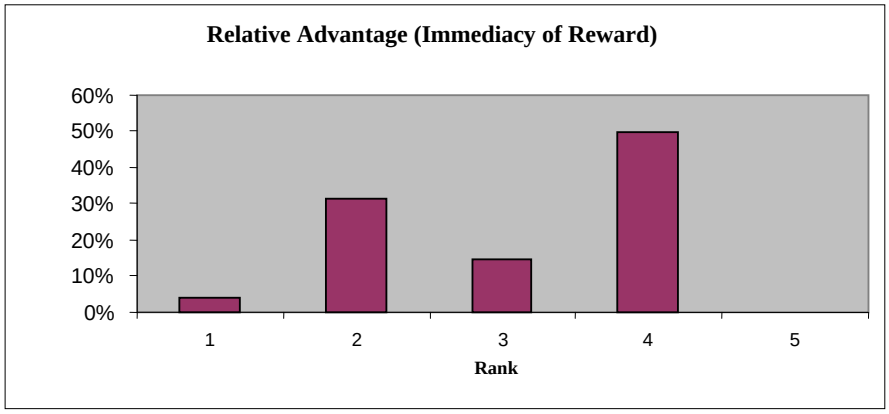


Figure 4-5 Relative Advantage (Saving of Effort)

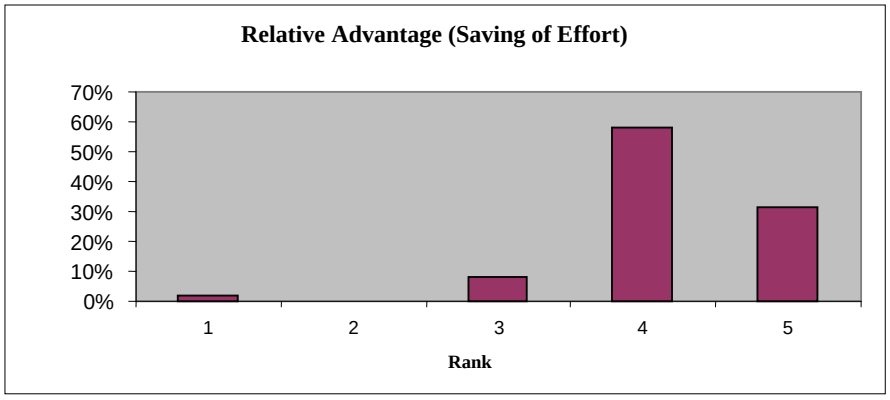


Figure 4-6 Relative Advantage (Low Initial Cost)

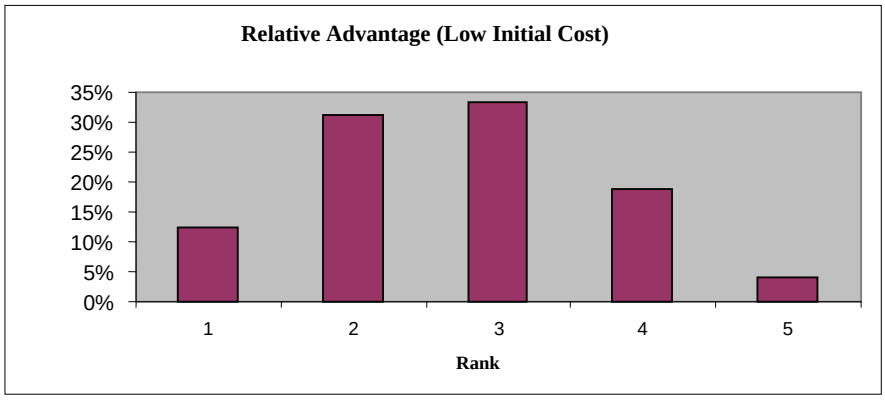


Figure 4-7 Relative Advantage

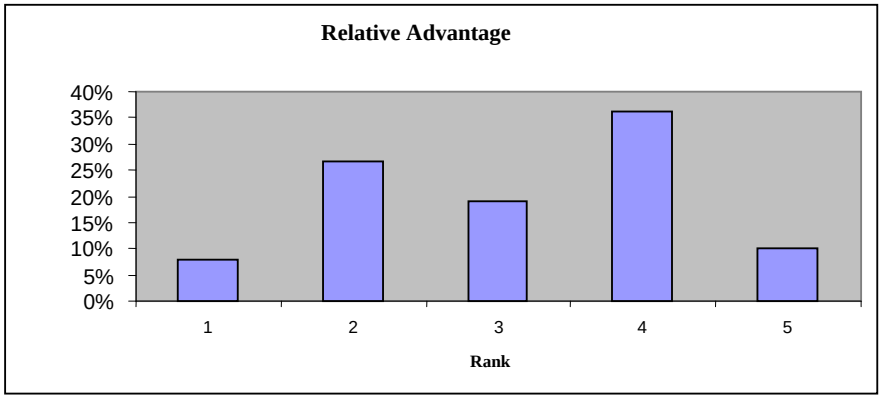


Figure 4-8 Compatibility (Need of Adopters)

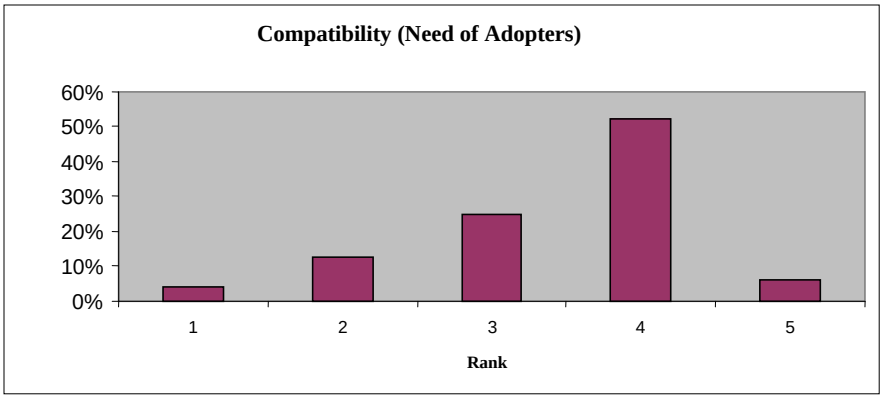


Figure 4-9 Compatibility (Cultural Values & Beliefs)

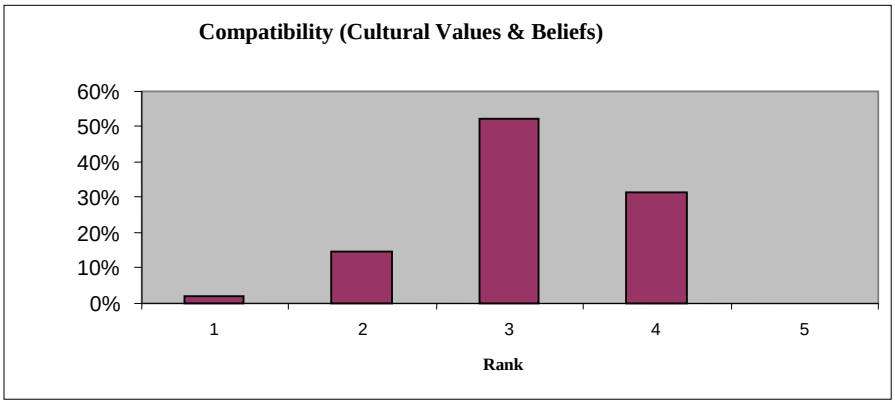


Figure 4-10 Compatibility (Past Experience)

Figure 4-11 Compatibility (Name)

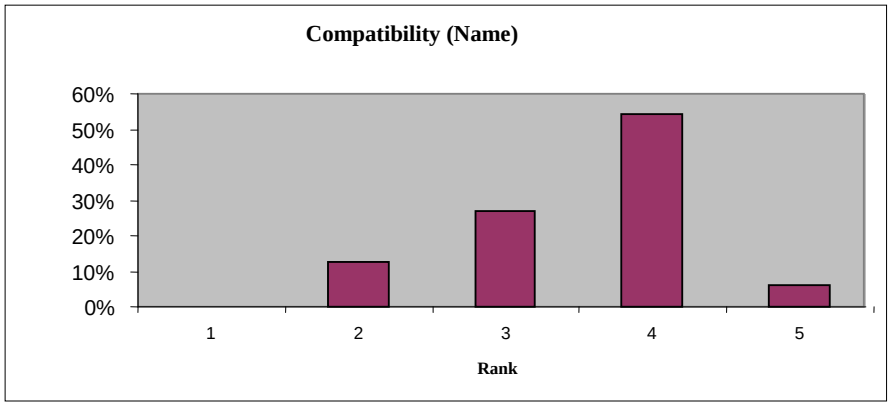


Figure 4-12 Compatibility

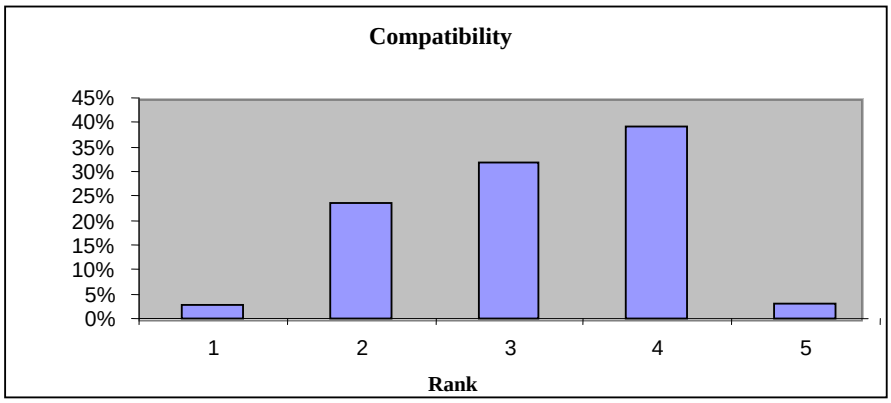


Figure 4-13 Simplicity (Use-1)

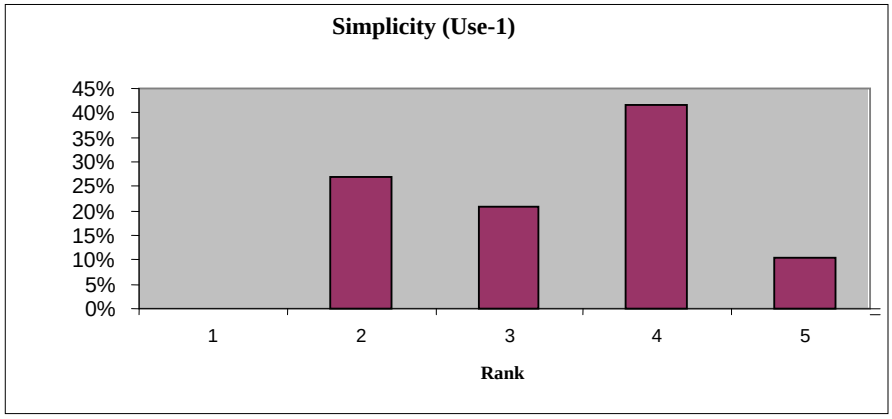


Figure 4-14 Simplicity (Use-2)

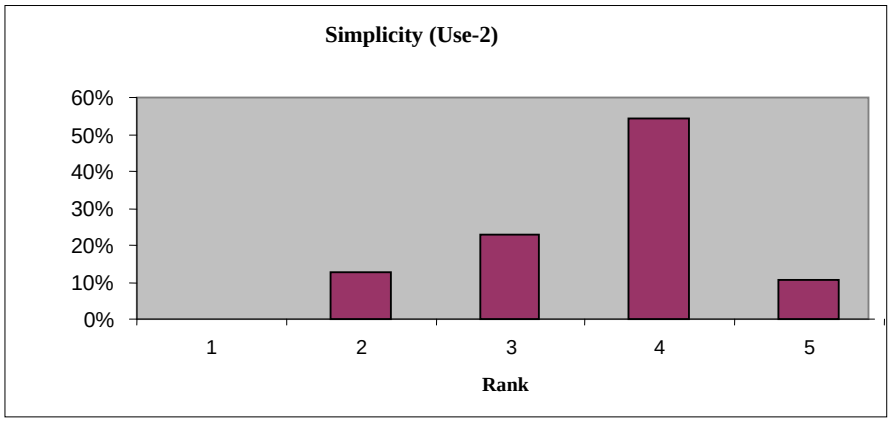


Figure 4-15 Simplicity (Understanding)

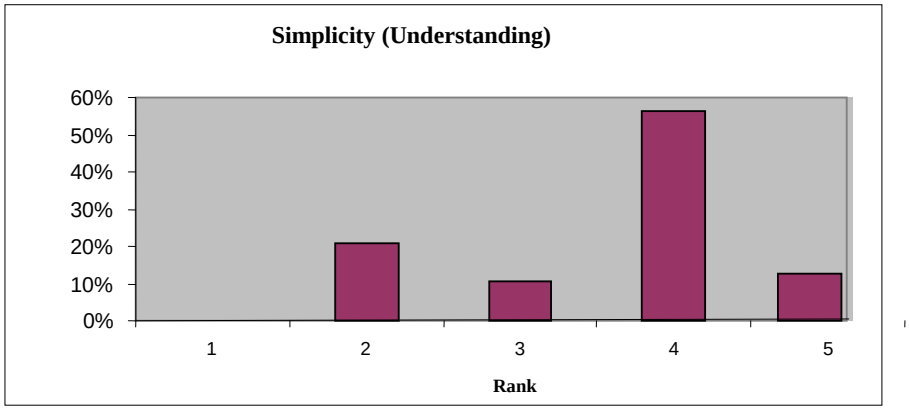


Figure 4-16 Simplicity

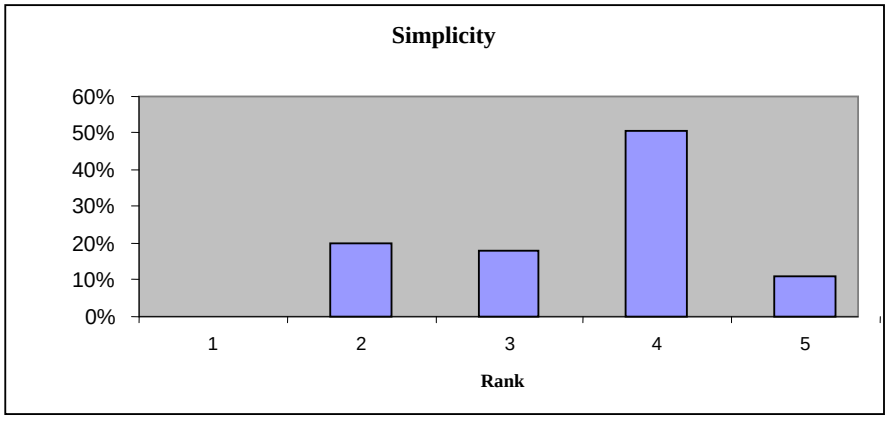


Figure 4-17 Trialability (Installment Basis)

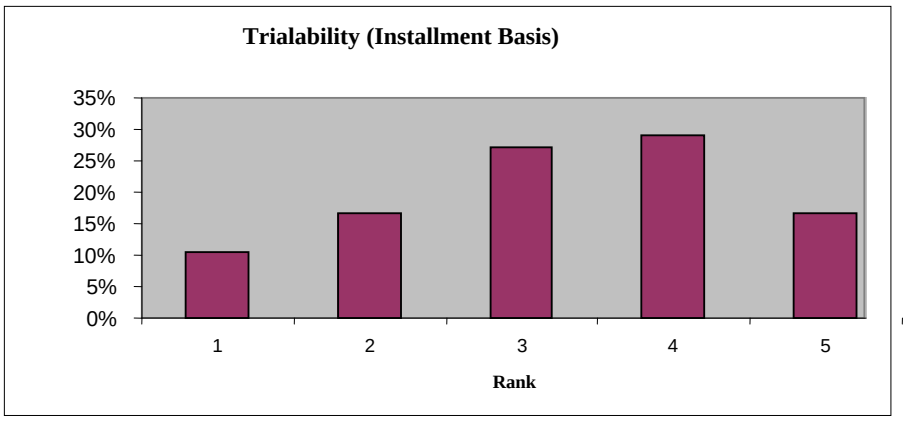


Figure 4-18 Trialability (Ease of Trying)

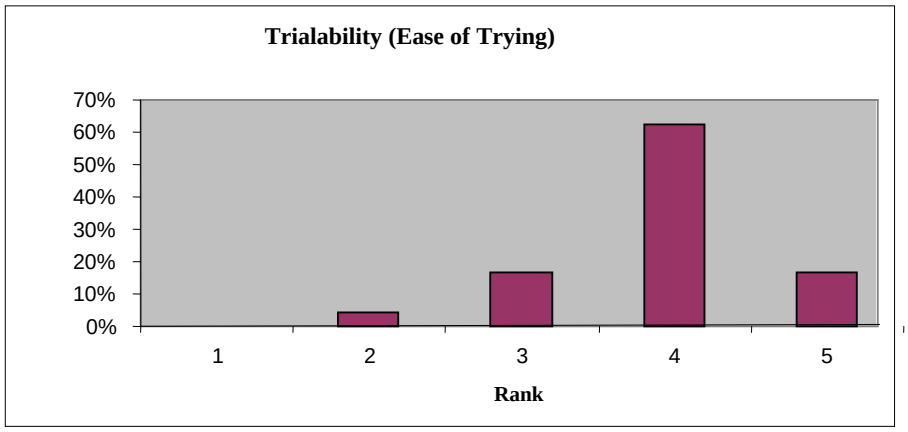


Figure 4-19 Trialability (Re-Invention)

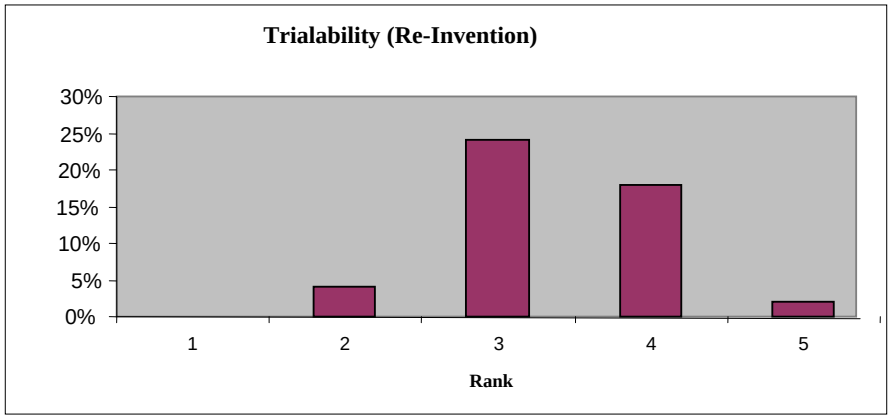


Figure 4-20 Trialability

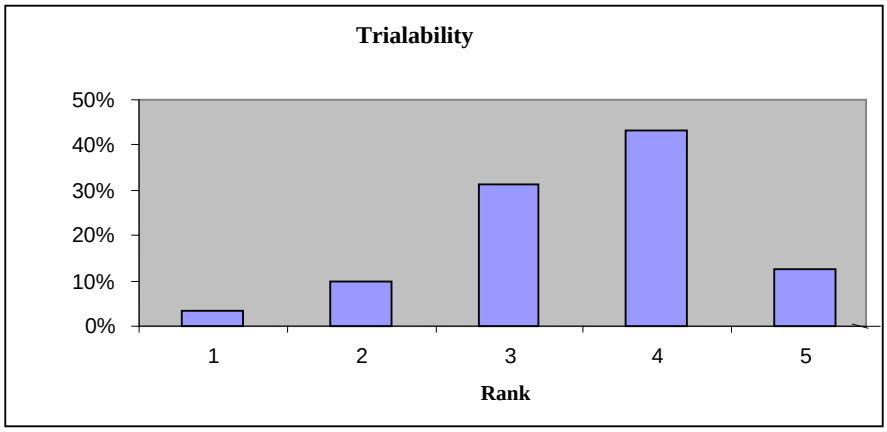


Figure 4-21 Observability (Observation-1)

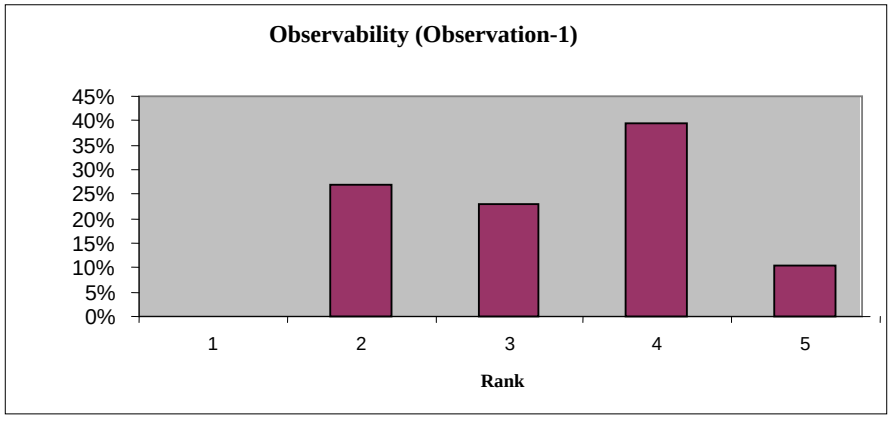


Figure 4-22 Observability (Observation-2)

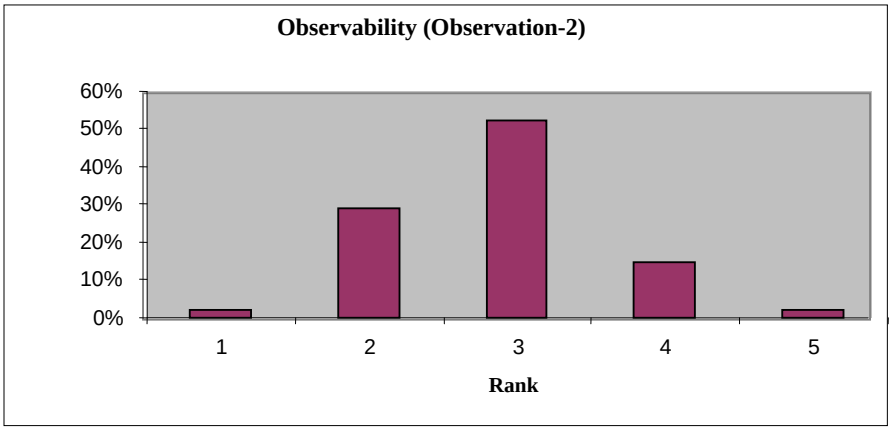


Figure 4-23 Observability (Observation-3)

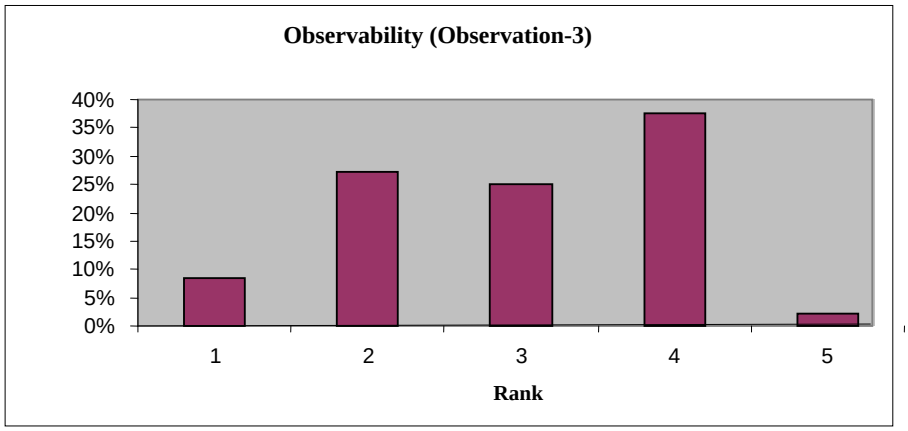


Figure 4-24 Observability (Observation-Combined)

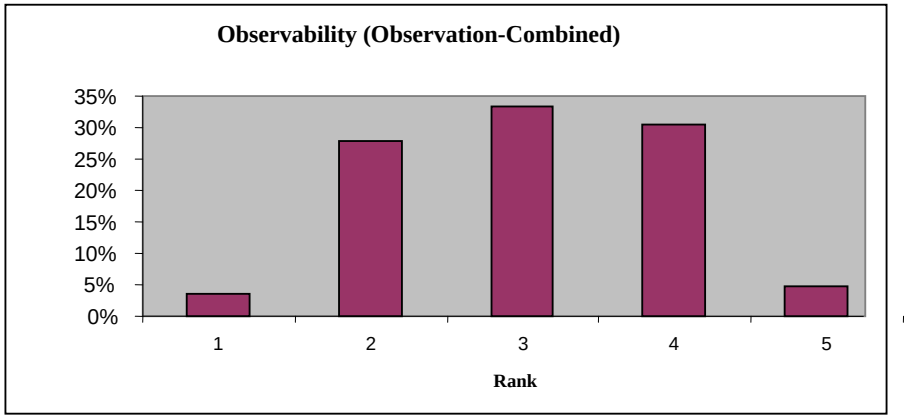


Figure 4-25 Observation (Describing)

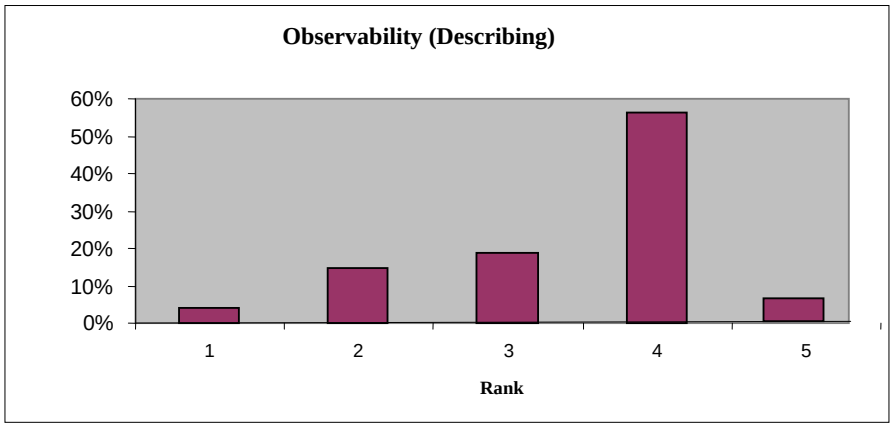
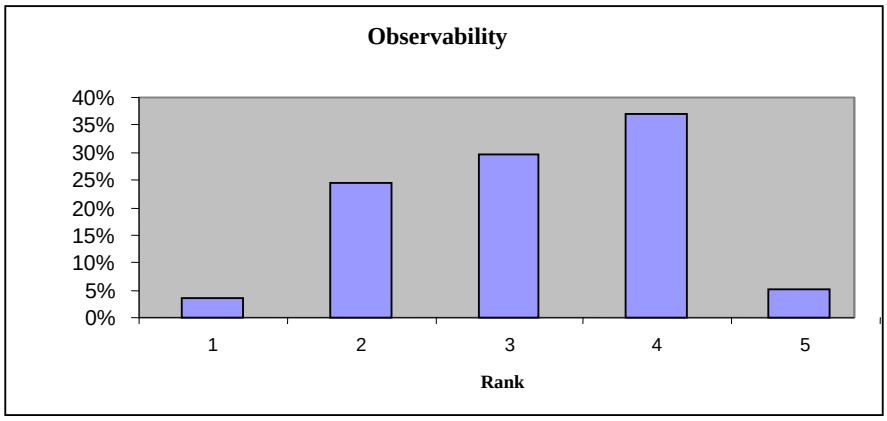


Figure 4-26 Observability



Students Who Have Not Taken Online Courses

Figure 4-27 Relative Advantage (Economic Profitability)

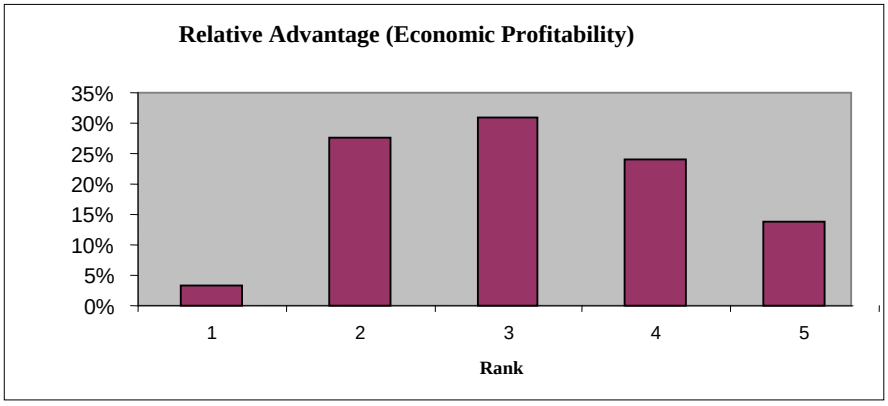


Figure 4-28 Relative Advantage (Saving of Time)

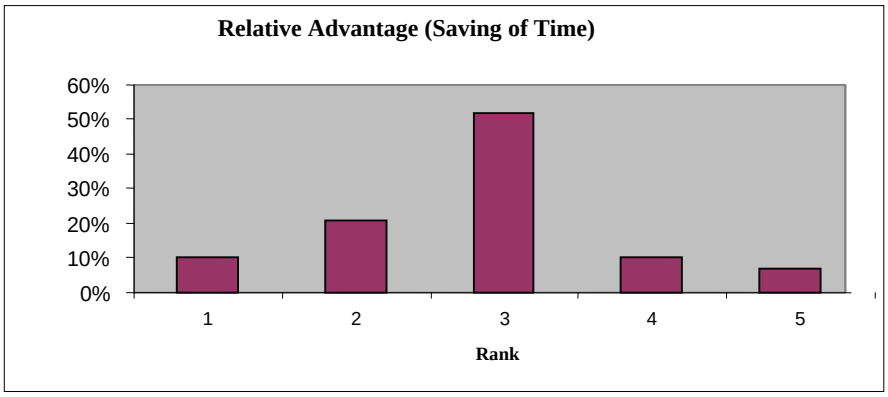


Figure 4-29 Relative Advantage (Reduced Discomfort)

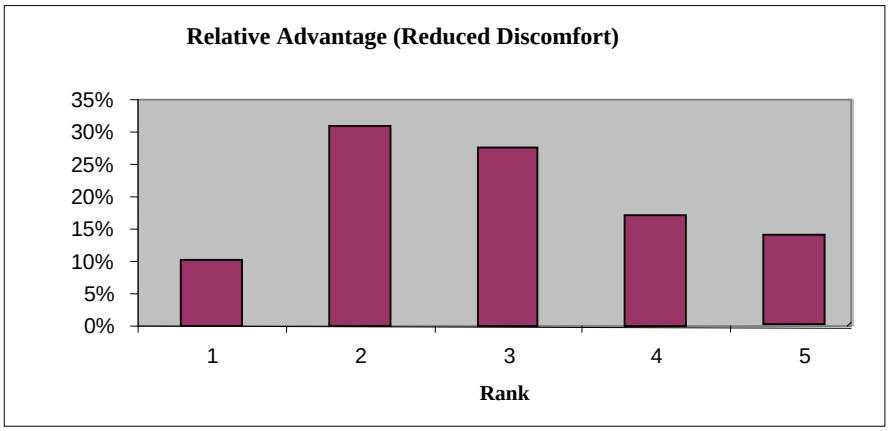


Figure 4-30 Relative Advantage (Immediacy of Reward)

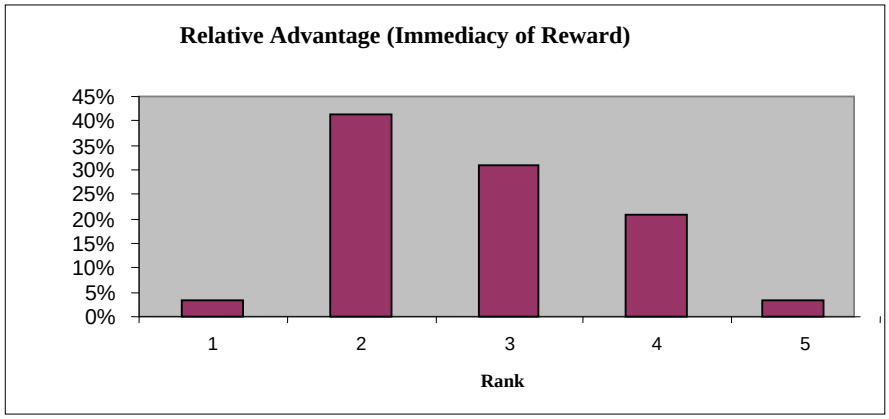


Figure 4-31 Relative Advantage (Saving of Effort)

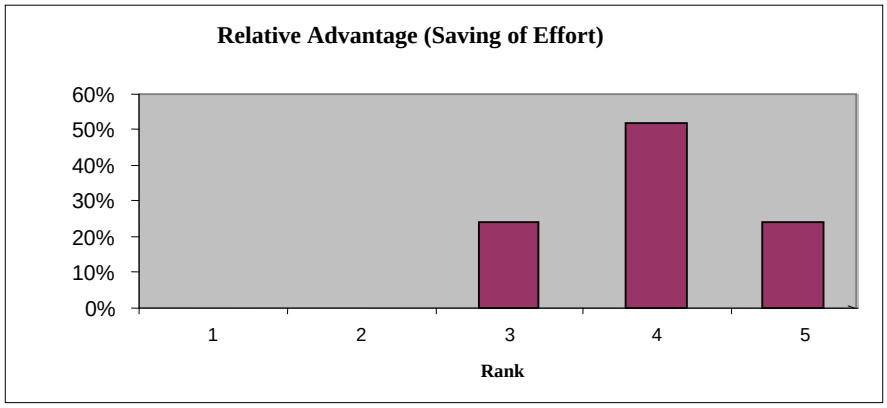


Figure 4-32 Relative Advantage (Low Initial Cost)

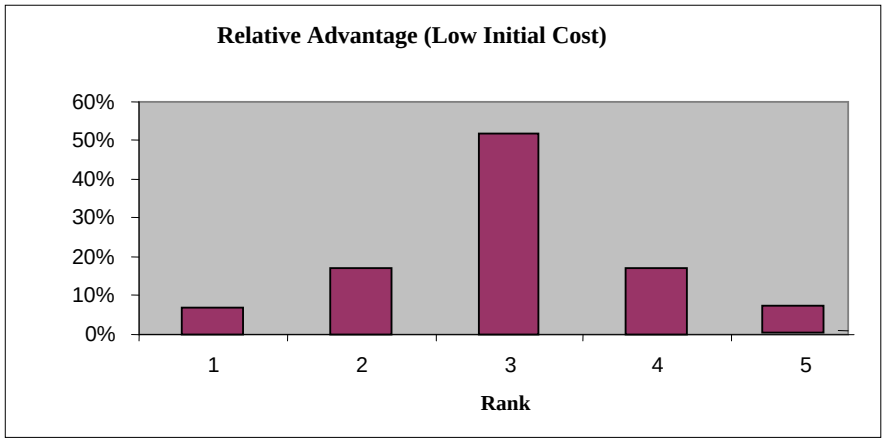


Figure 4-33 Relative Advantage

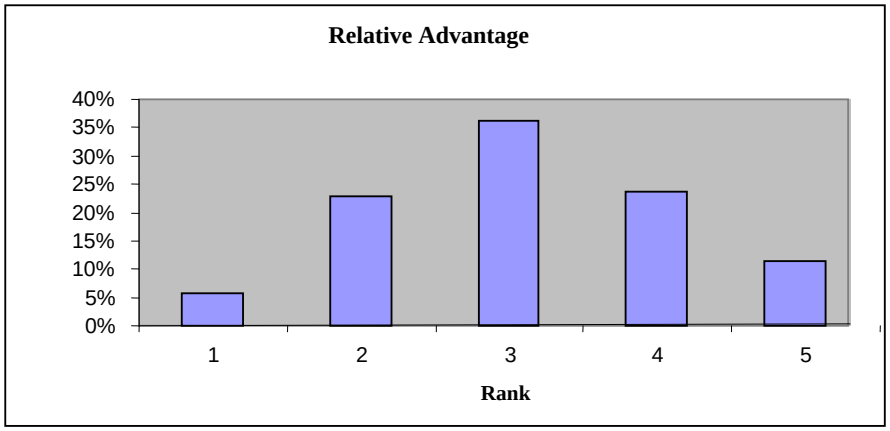


Figure 4-34 Compatibility (Need)

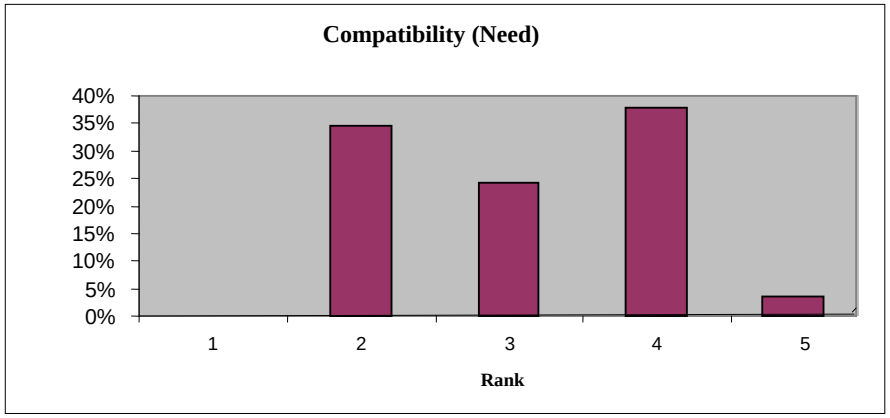


Figure 4-35 Compatibility (Cultural Values)

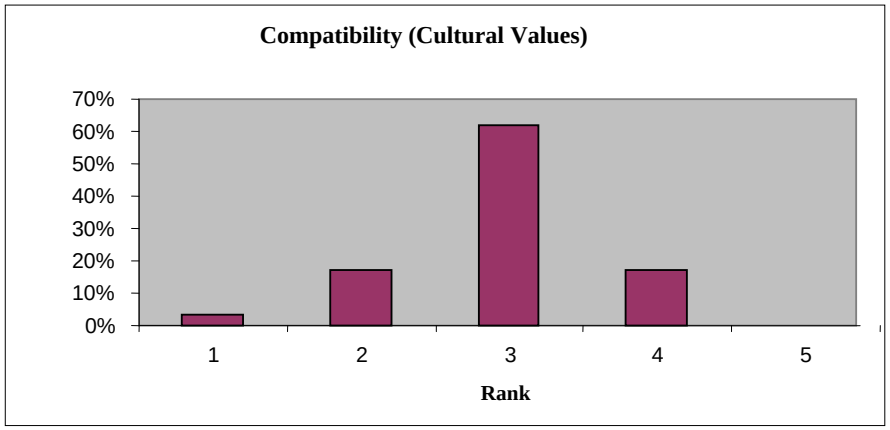


Figure 4-36 Compatibility (Past Experience)

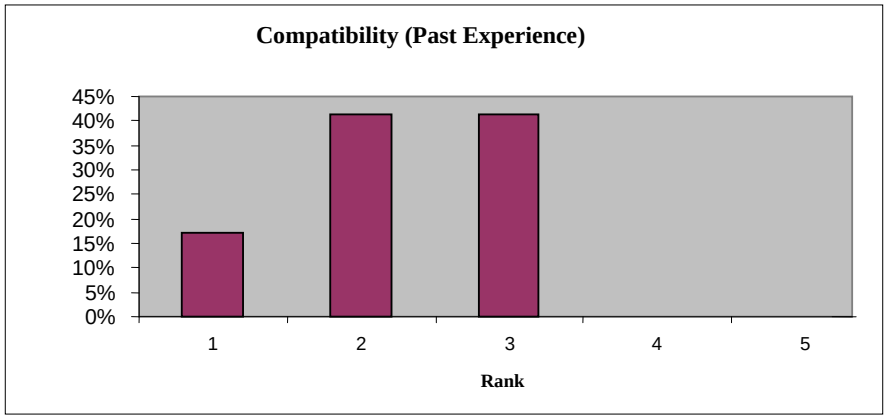


Figure 4-37 Compatibility (Name)

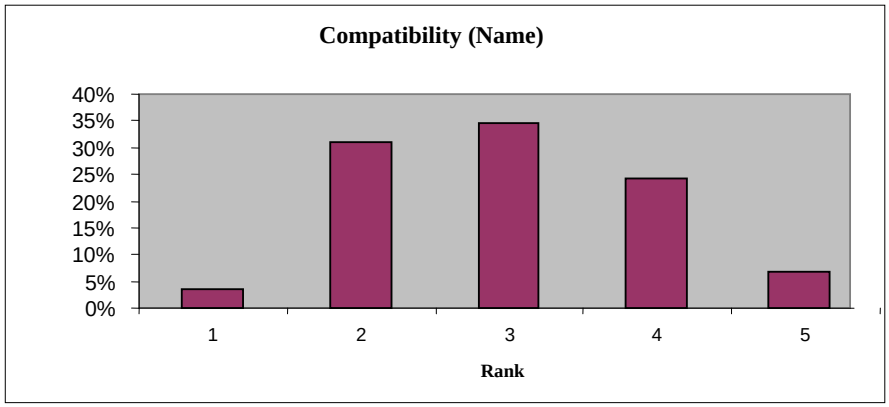


Figure 4-38 Compatibility

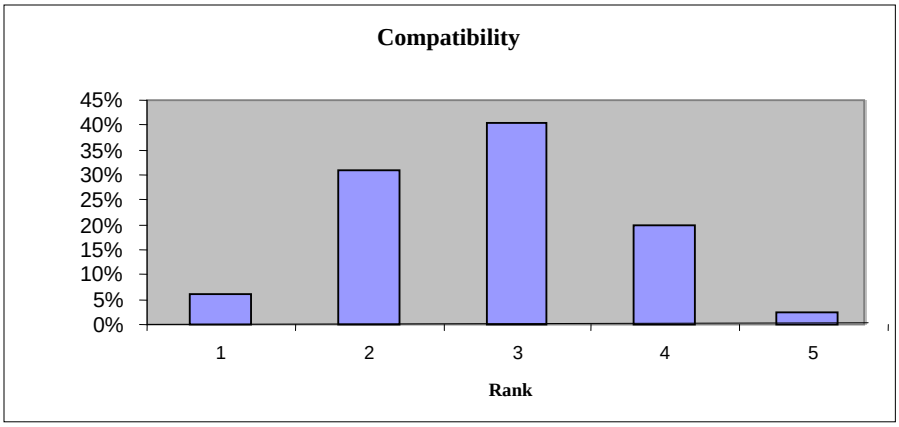


Figure 4-39 Simplicity (Use-1)

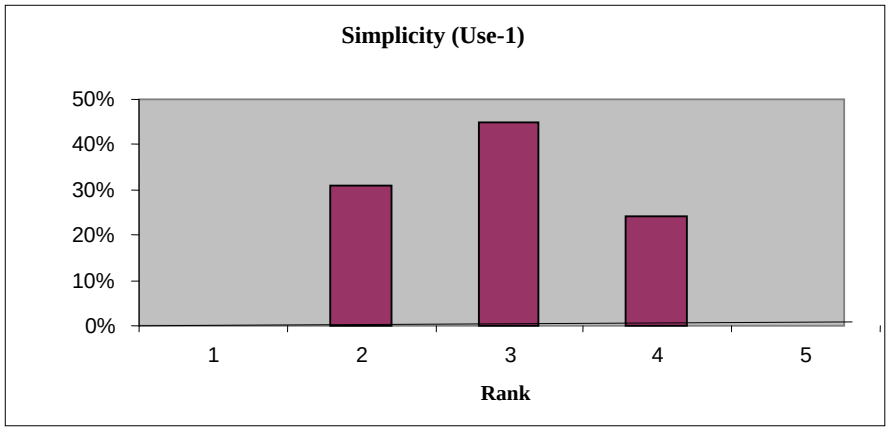


Figure 4-40 Simplicity (Use-2)

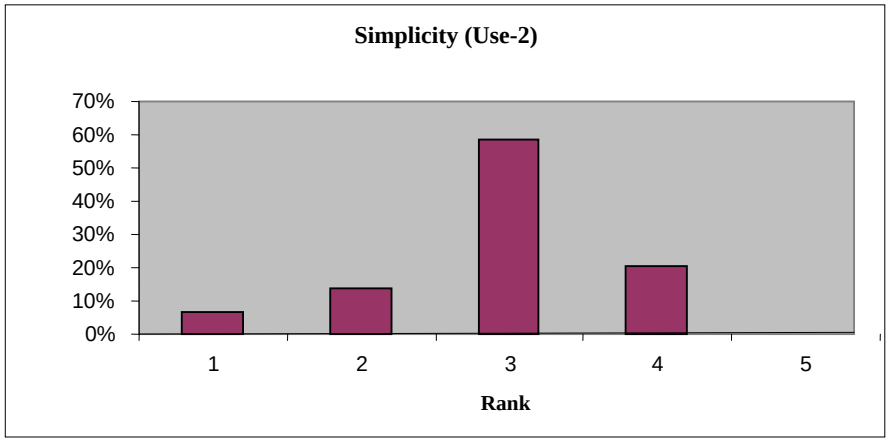


Figure 4-41 Simplicity (Use-Combined)

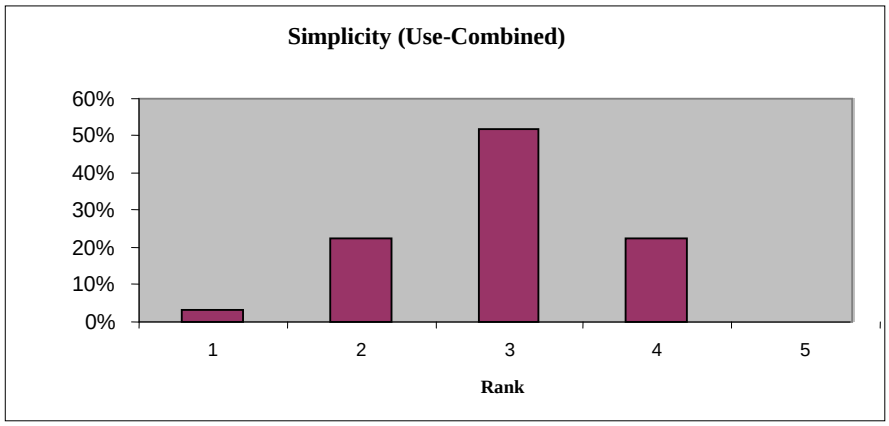


Figure 4-42 Simplicity (Understanding)

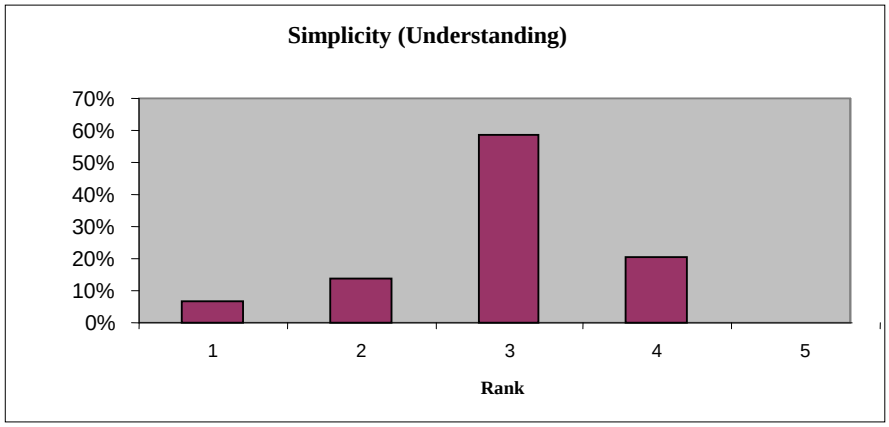


Figure 4-43 Simplicity

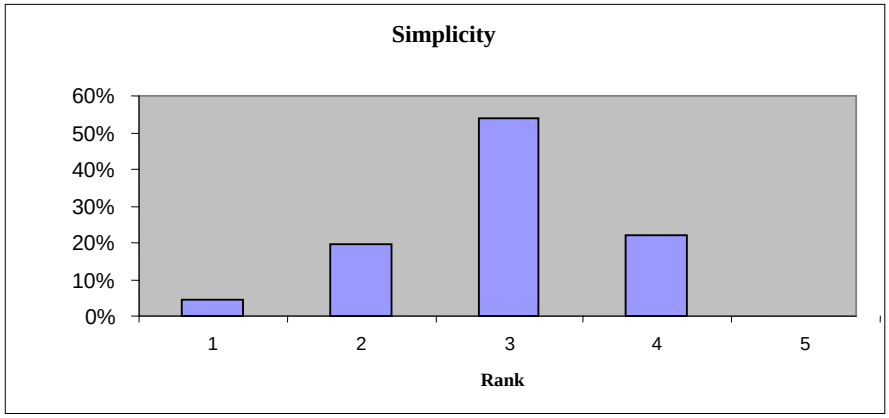


Figure 4-44 Trialability (Installment Basis)

Figure 4-45 Trialability (Ease of Trying)

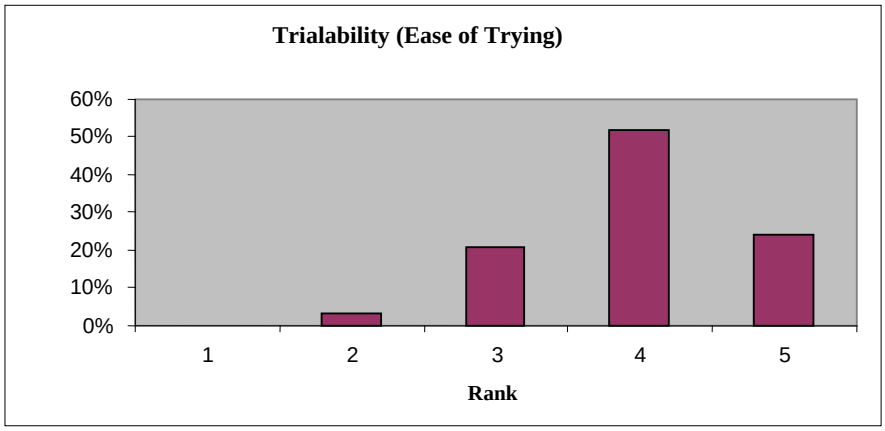


Figure 4-46 Trialability (Re-Invention)

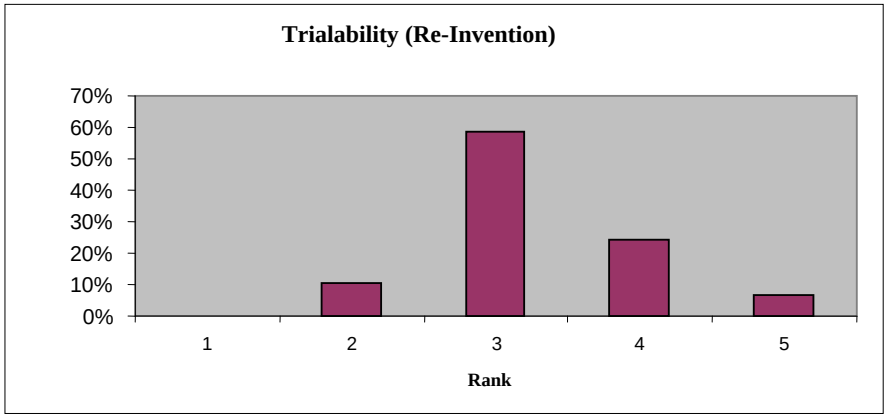


Figure 4-47 Trialability

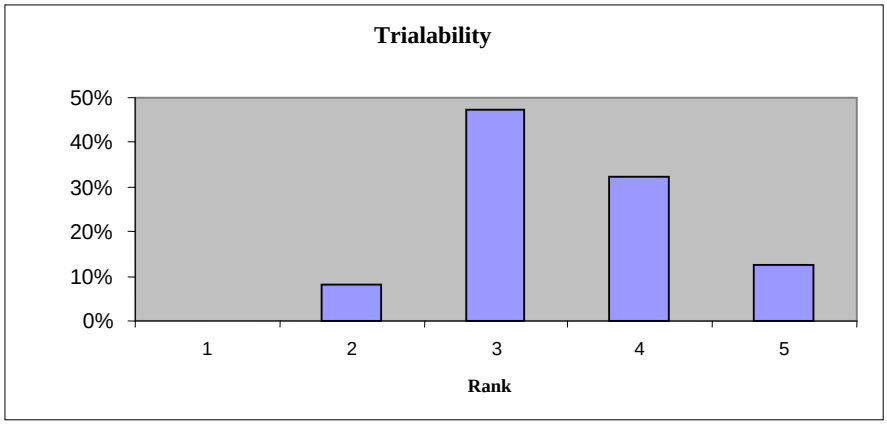


Figure 4-48 Observability (Observation-1)

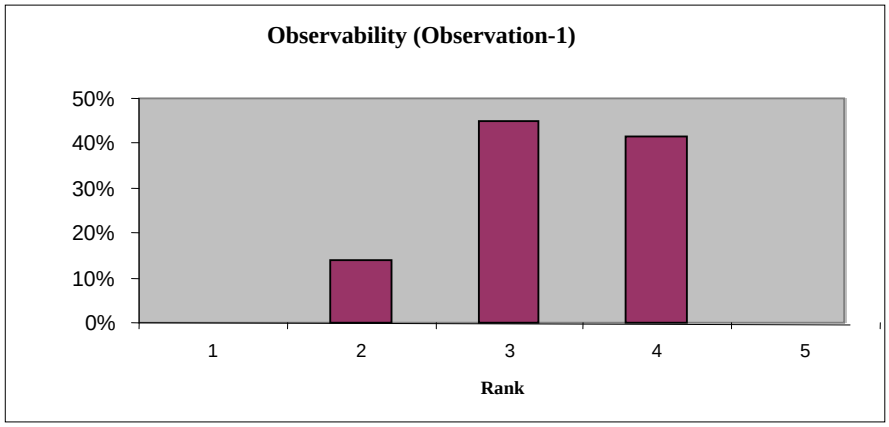


Figure 4-49 Observability (Observation-2)

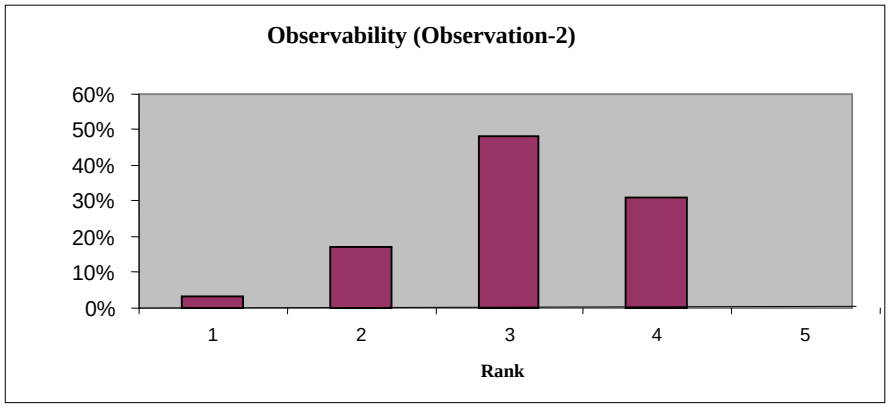


Figure 4-50 Observability (Observation-3)

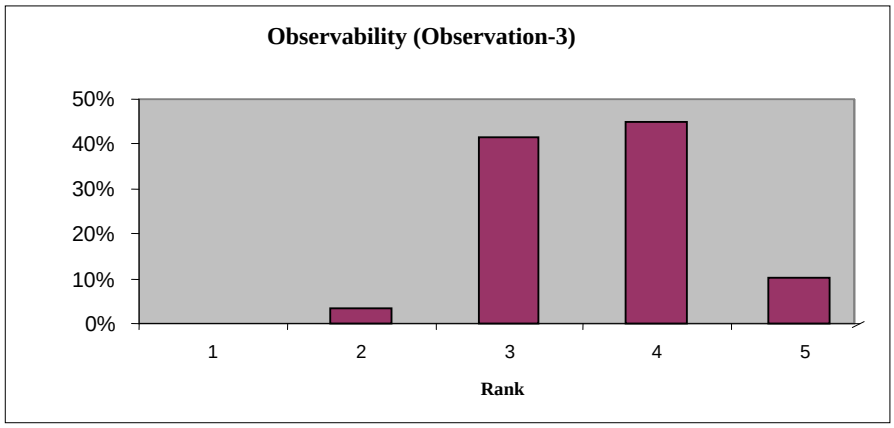


Figure 4-51 Observability (Observation-Combined)

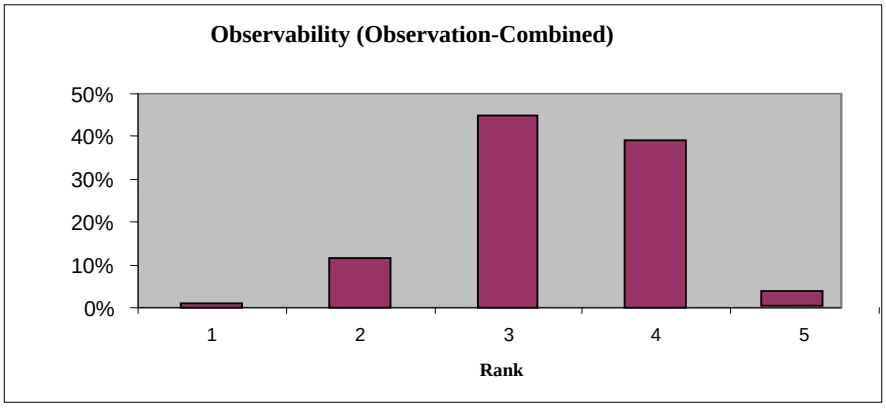


Figure 4-52 Observability (Describing)

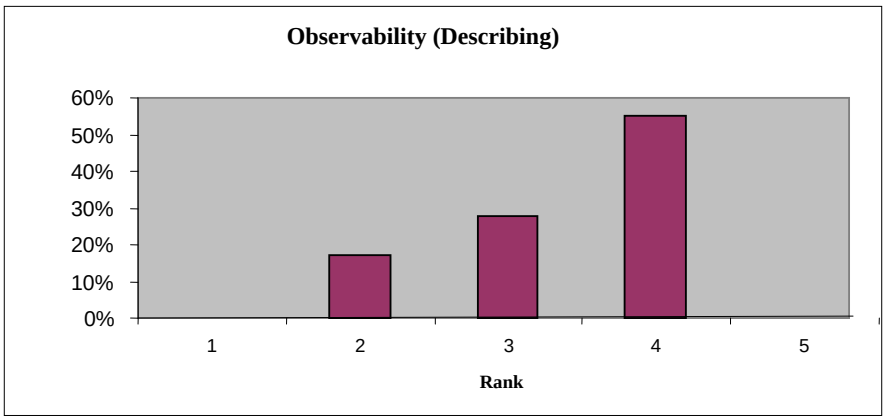
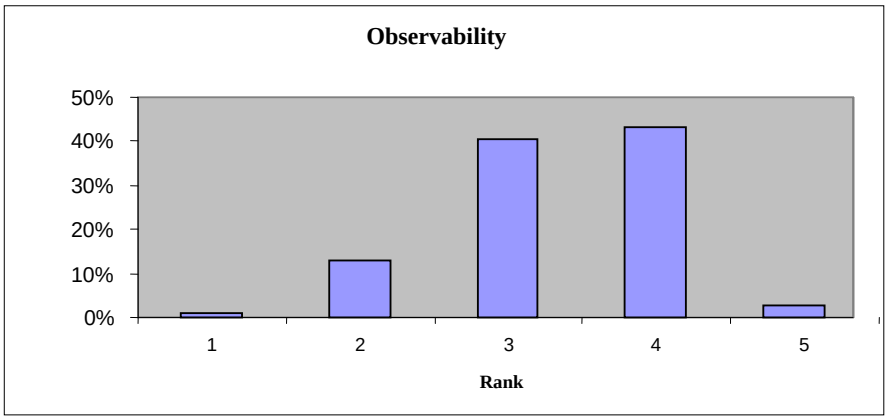


Figure 4-53 Observability



Faculty Members Who Have Taught Online Courses

Figure 4-54 Relative Advantage (Economic Profitability)

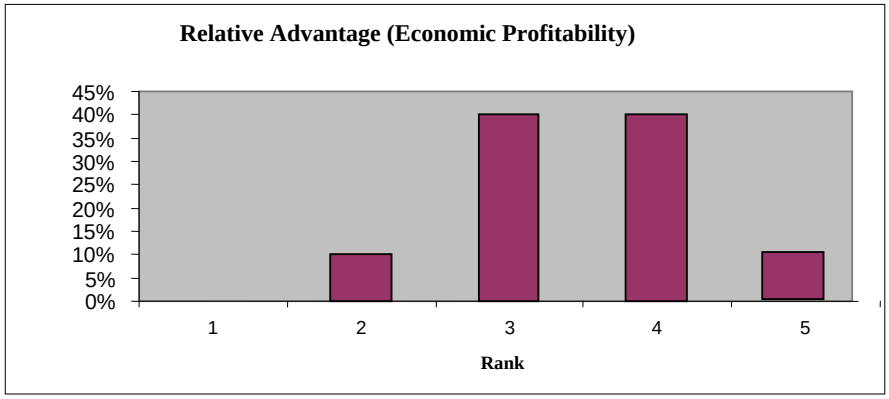


Figure 4-55 Relative Advantage (Saving of Time)

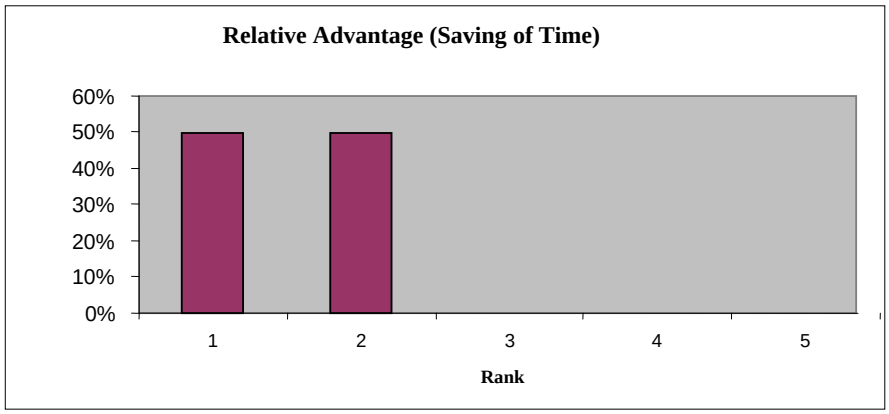


Figure 4-56 Relative Advantage (Reduced Discomfort)

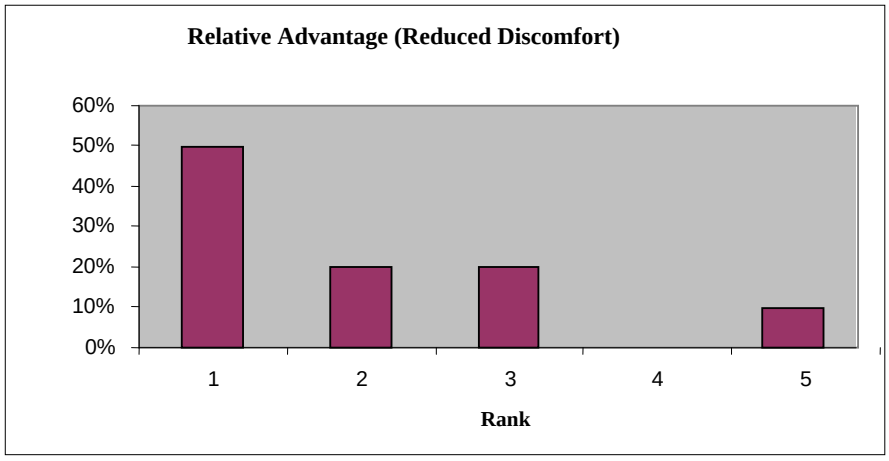


Figure 4-57 Relative Advantage (Immediacy of Reward)

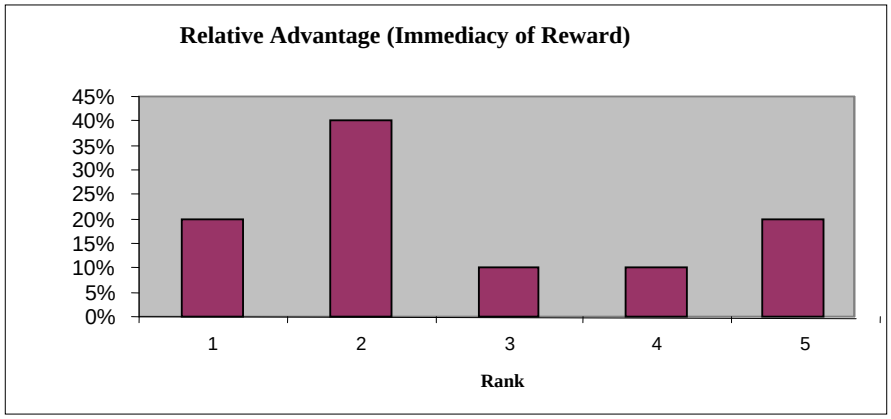


Figure 4-58 Relative Advantage (Saving of Effort)

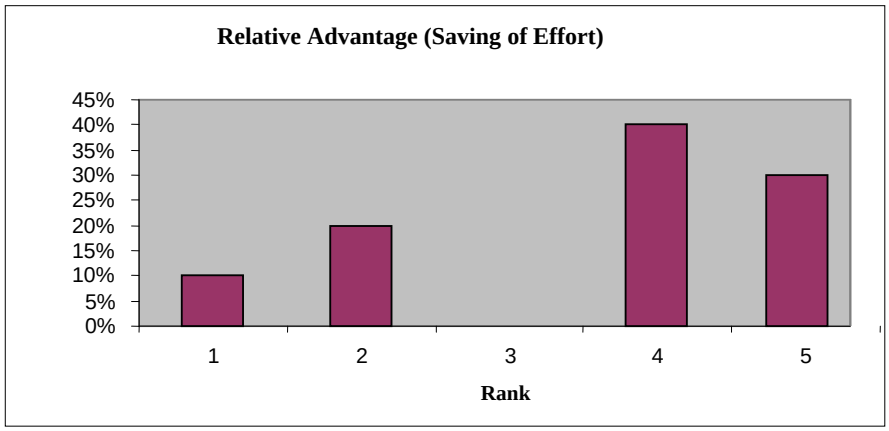


Figure 4-59 Relative Advantage (Low Initial Cost)

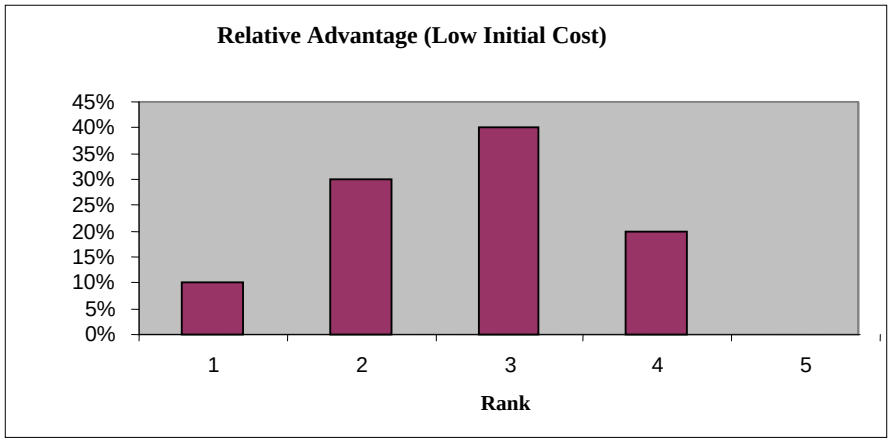


Figure 4-60 Relative Advantage

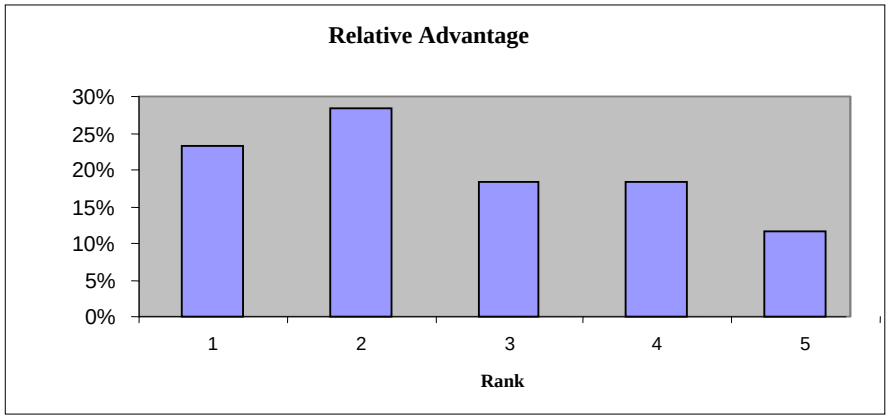


Figure 4-61 Compatibility (Need of Adopters)

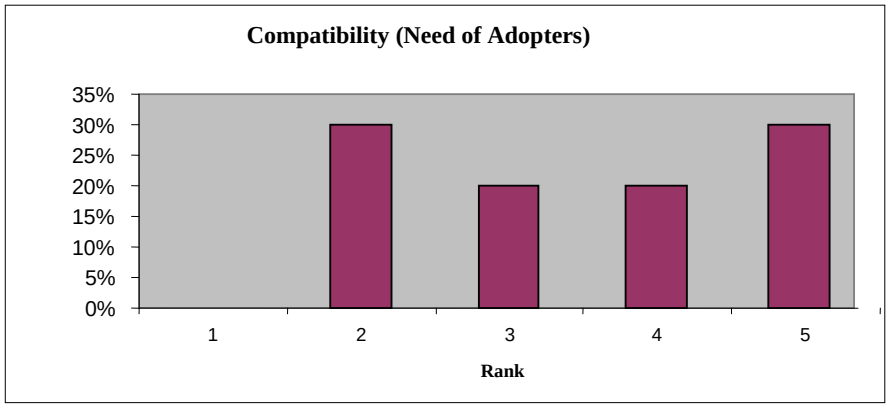
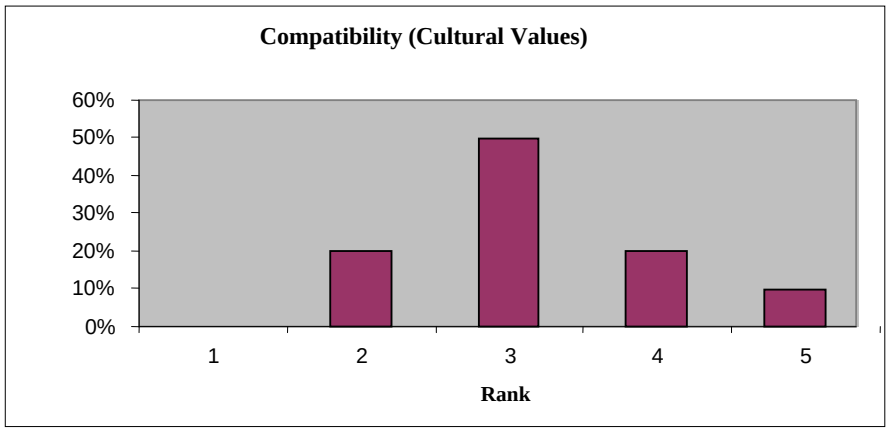


Figure 4-62 Compatibility (Cultural Values)



4-63 Compatibility (Past Experience)

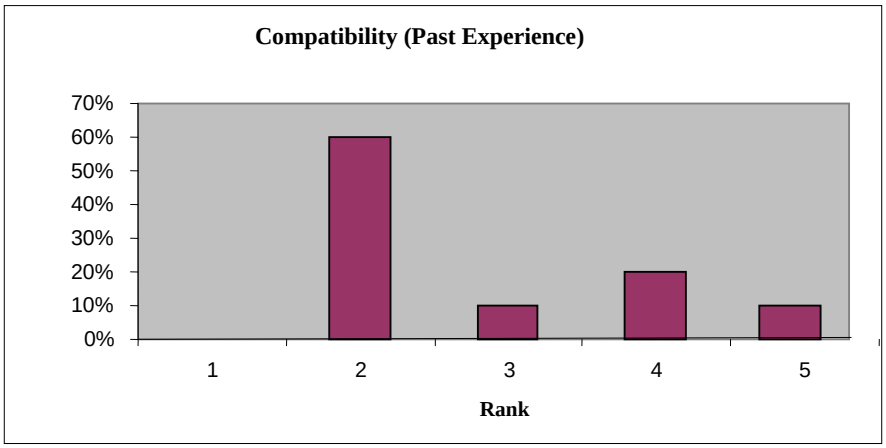


Figure 4-64 Compatibility (Name)

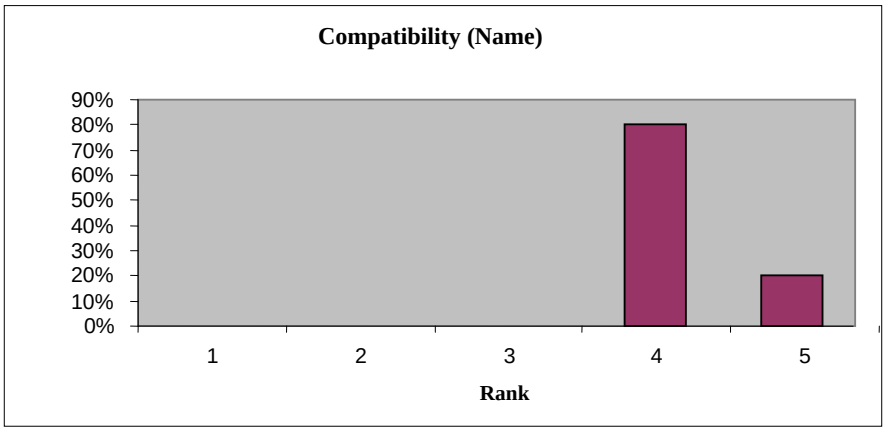


Figure 4-65 Compatibility

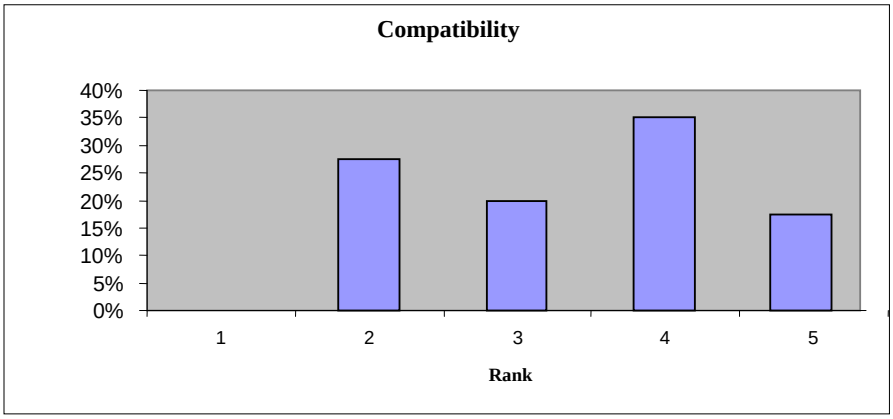


Figure 4-66 Simplicity (Use-1)

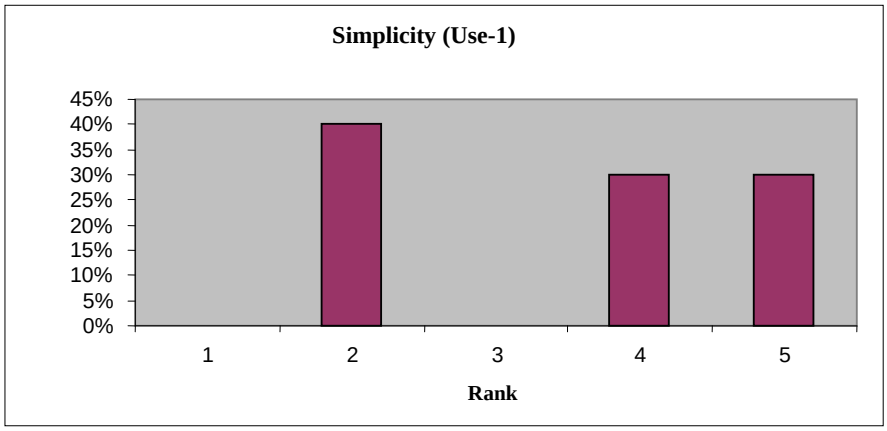


Figure 4-67 Simplicity (Use-2)

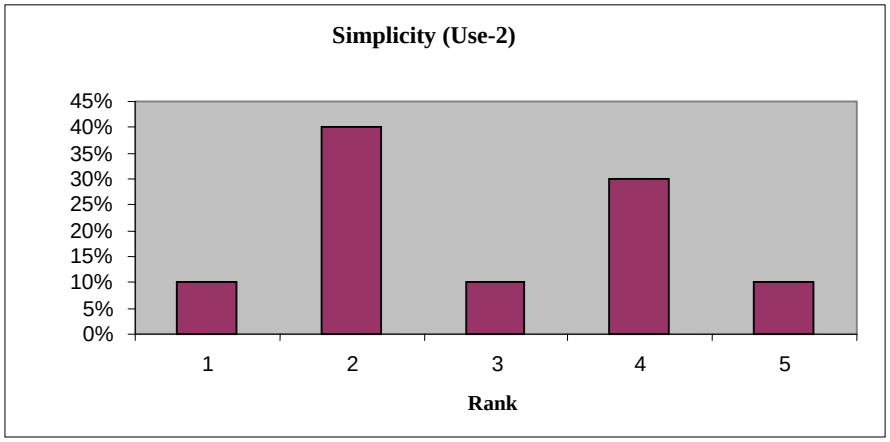


Figure 4-68 Simplicity (Use-Combined)

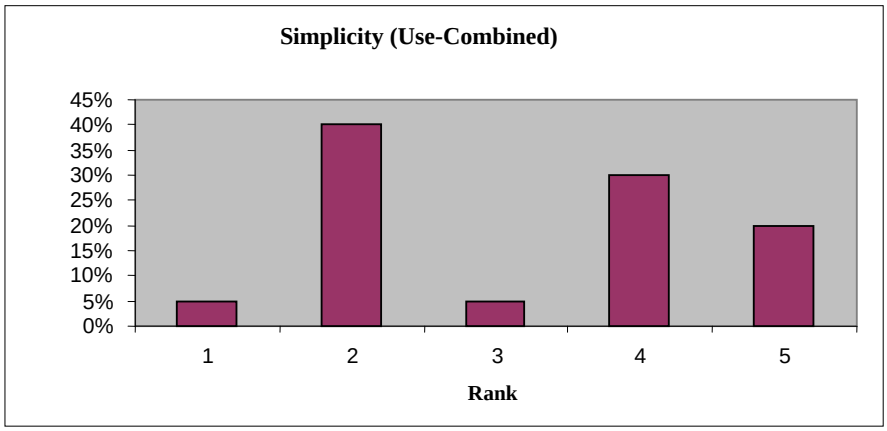


Figure 4-69 Simplicity (Understanding)

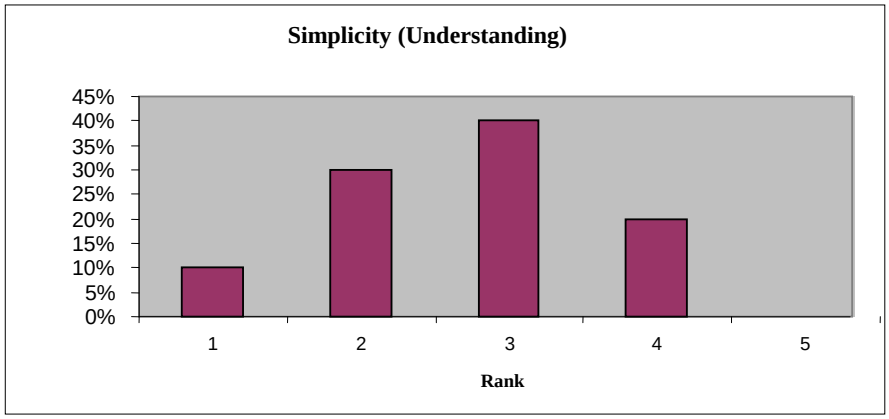


Figure 4-70 Simplicity

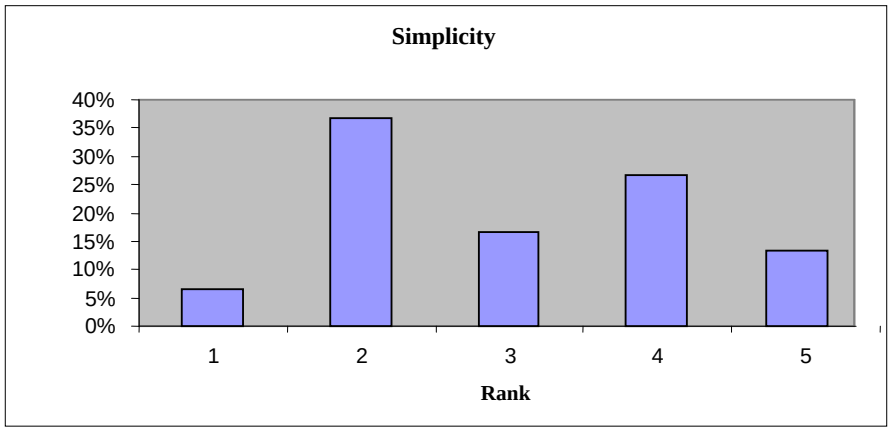


Figure 4-71 Trialability (Installment Basis)

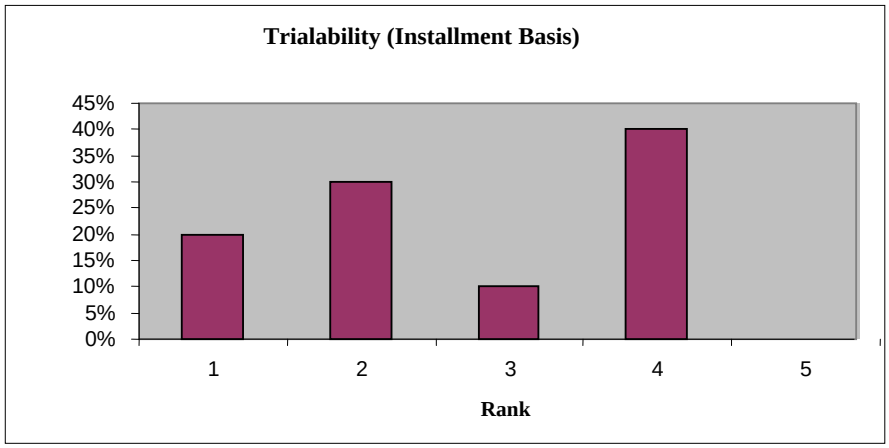


Figure 4-72 Trialability (Ease of Trying)

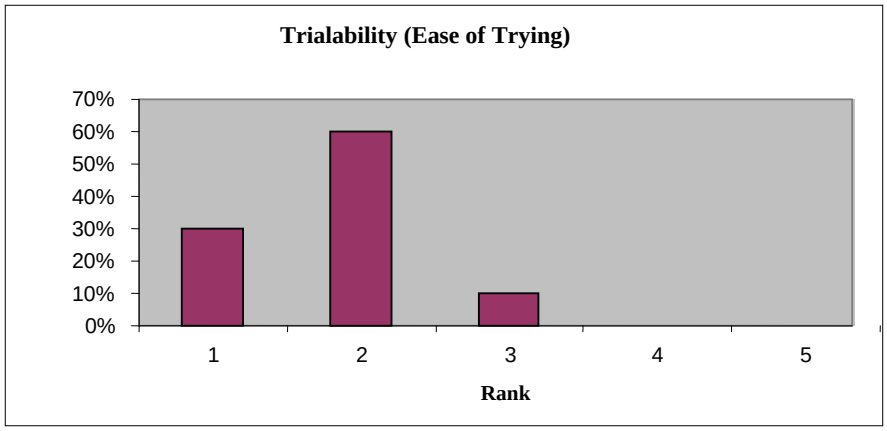


Figure 4-73 Trialability (Re-Invention)

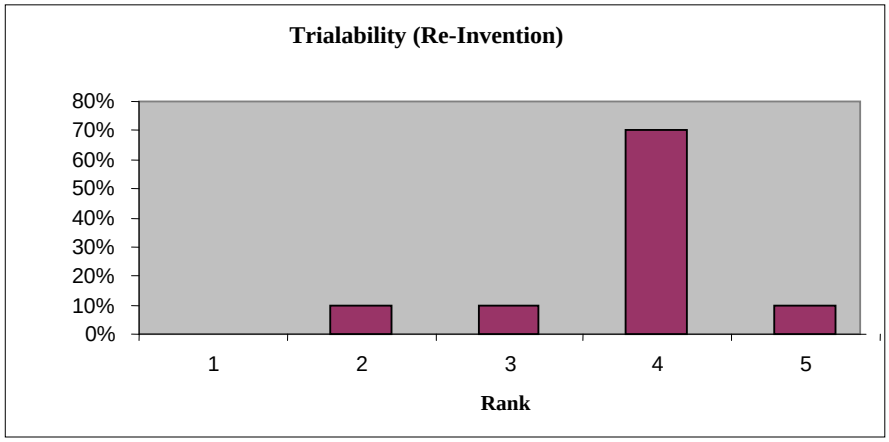


Figure 4-74 Trialability

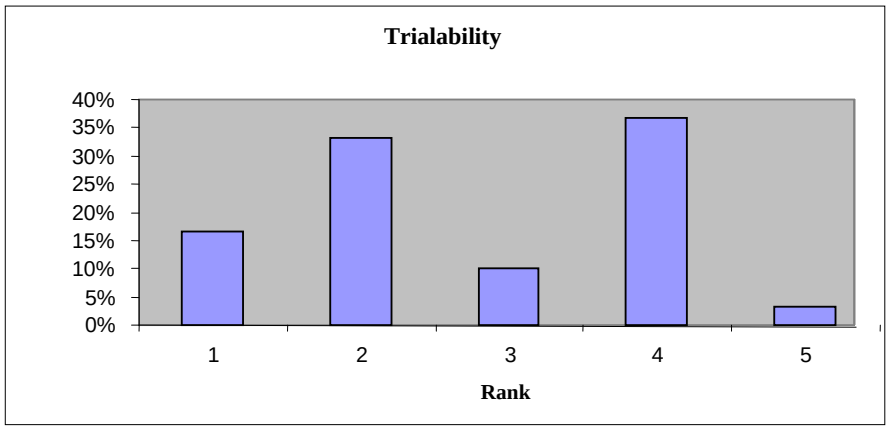


Figure 4-75 Observability (Observation-1)

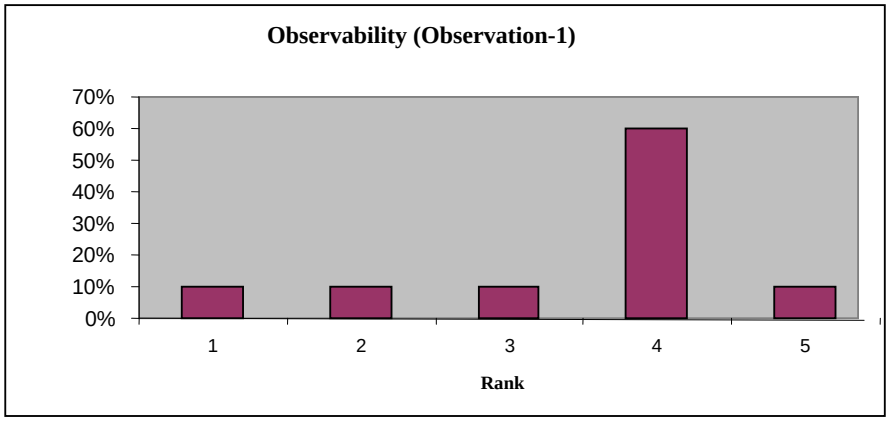


Figure 4-76 Observability (Observation-2)

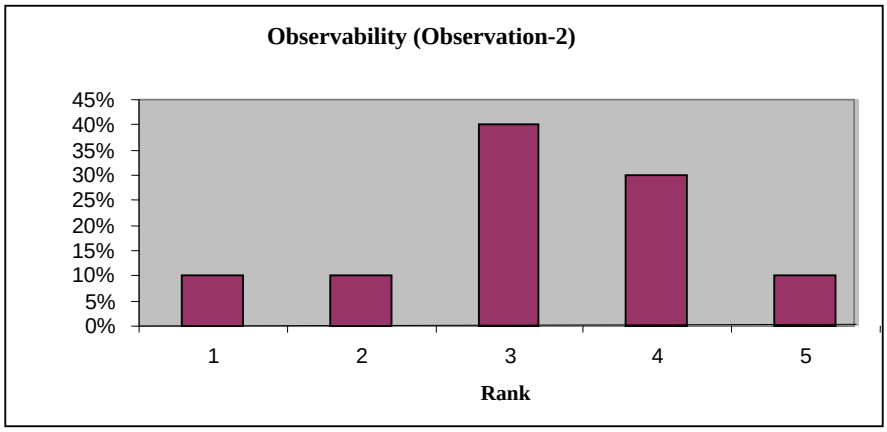


Figure 4-77 Observability (Observation-3)

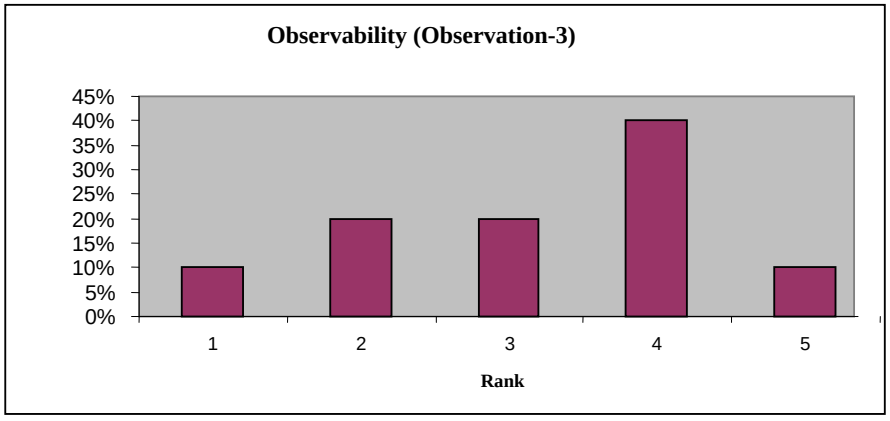


Figure 4-78 Observability (Observation-Combined)

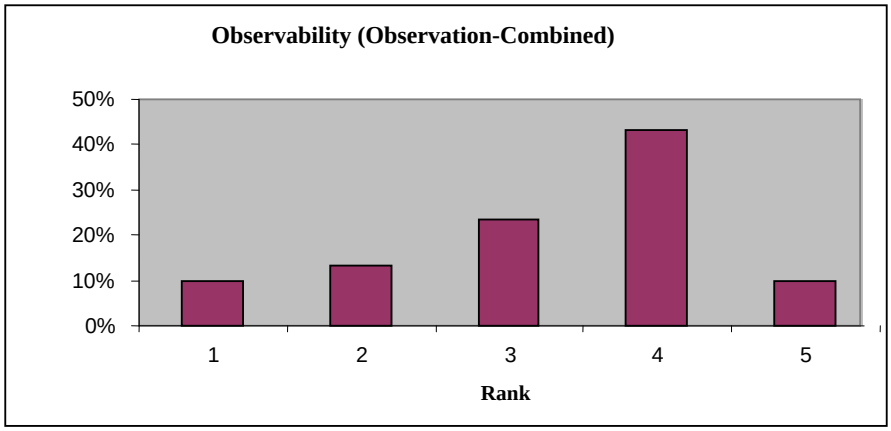


Figure 4-79 Observability (Describing)

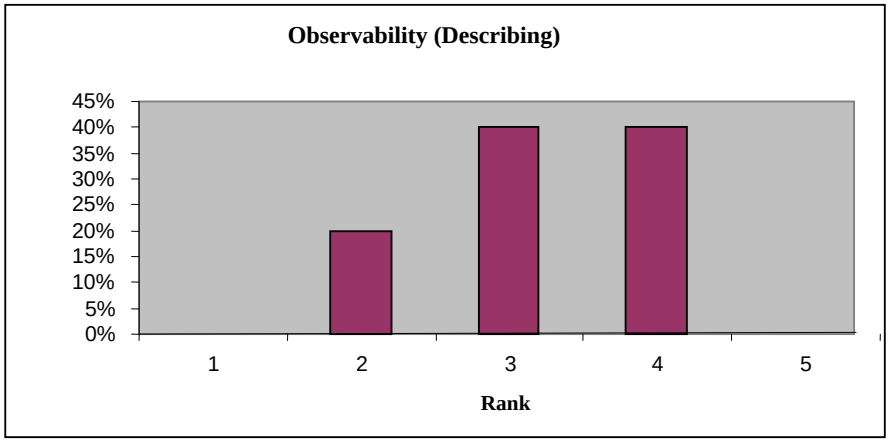
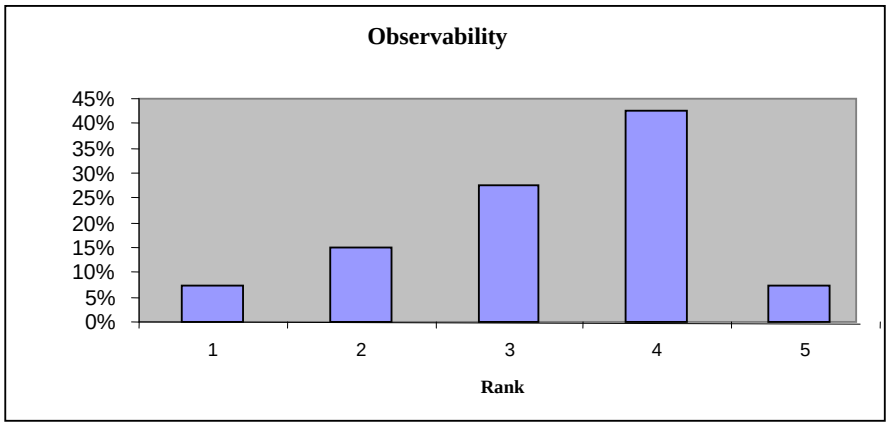


Figure 4-80 Observability



Faculty Who Have Not Taught Online Courses

Figure 4-81 Relative Advantage (Economic Profitability)

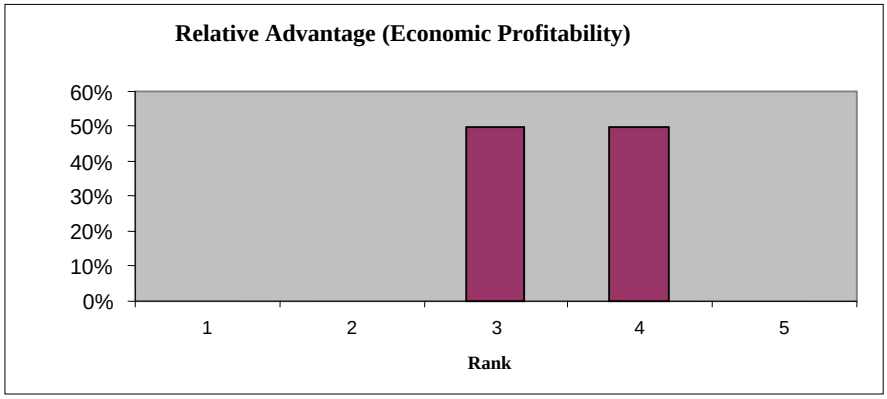


Figure 4-82 Relative Advantage (Saving of Time)

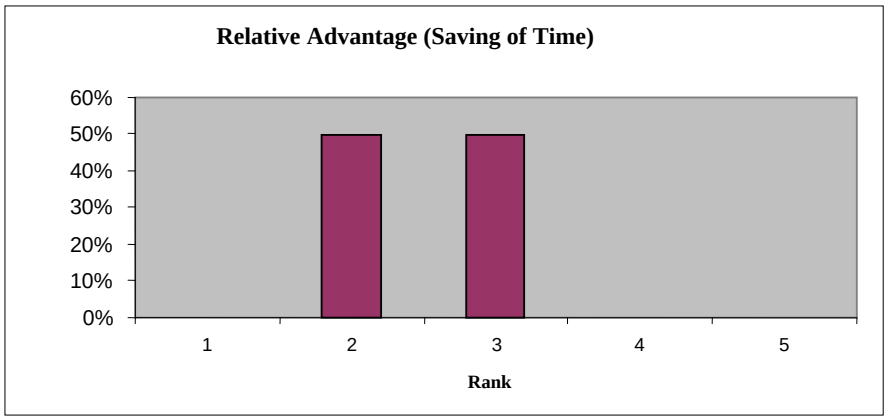


Figure 4-83 Relative Advantage (Reduced Discomfort)

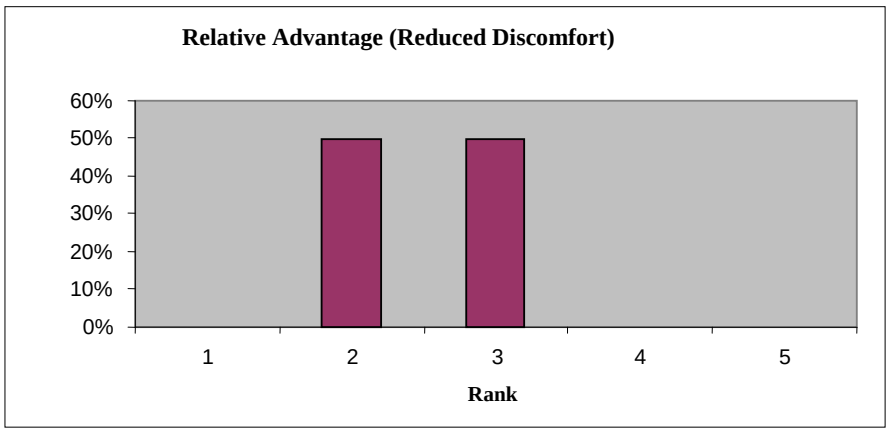


Figure 4-84 Relative Advantage (Immediacy of Reward)

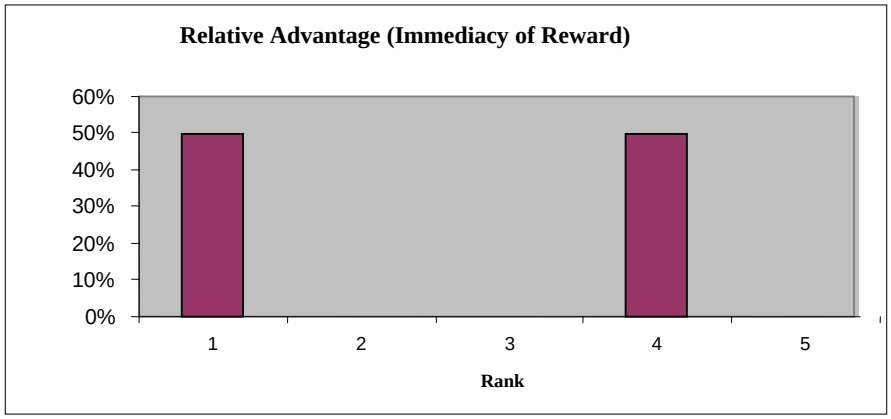


Figure 4-85 Relative Advantage (Saving of Effort)

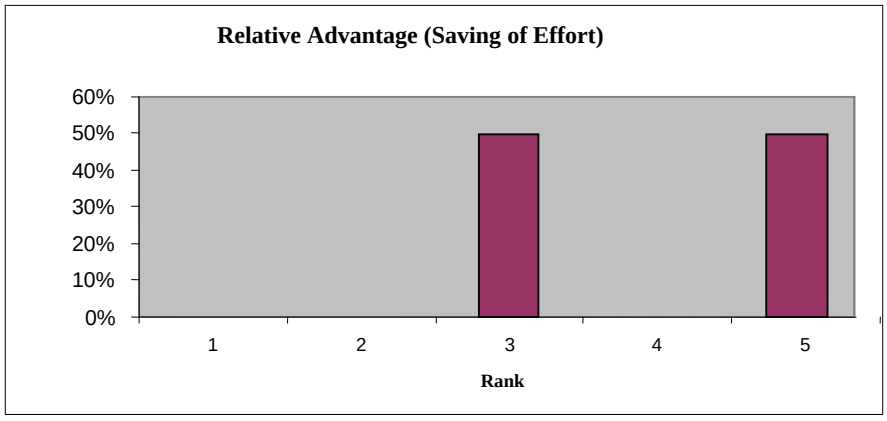


Figure 4-86 Relative Advantage (Low Initial Cost)

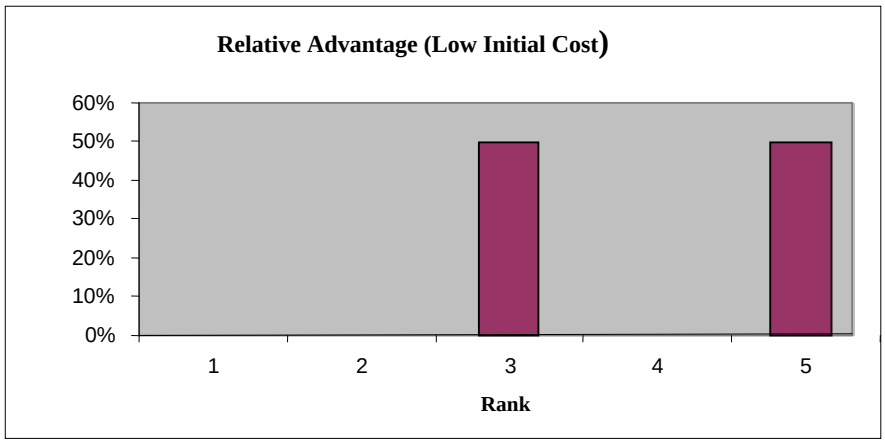


Figure 4-87 Relative Advantage

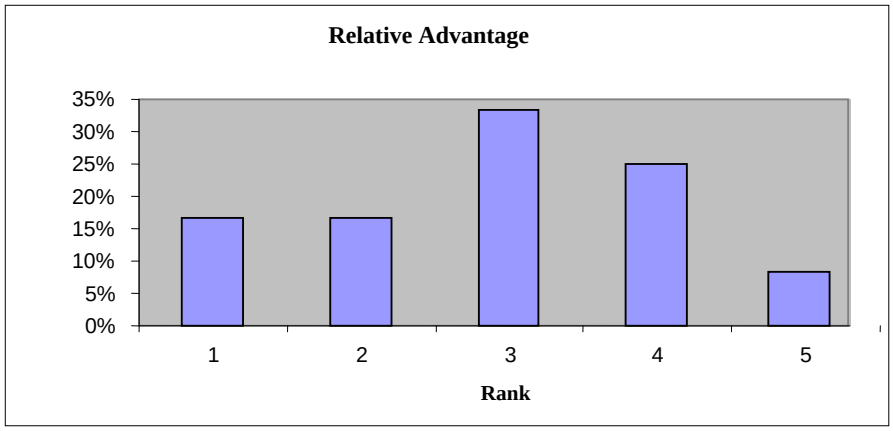


Figure 4-88 Compatibility (Need of Adopters)

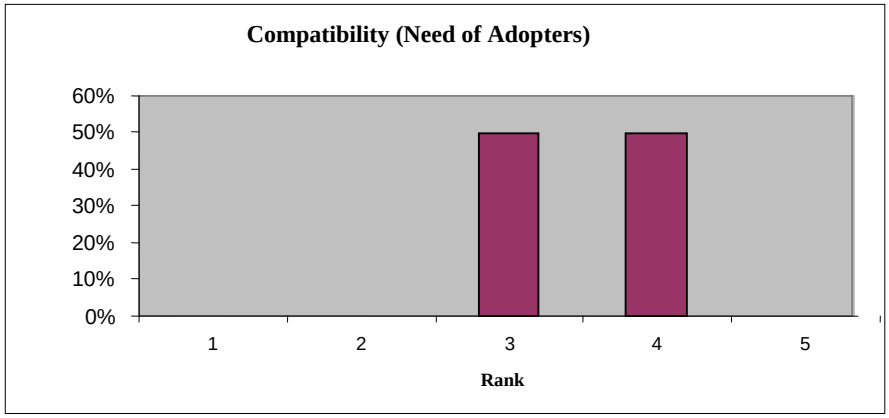


Figure 4-89 Compatibility (Current Values)

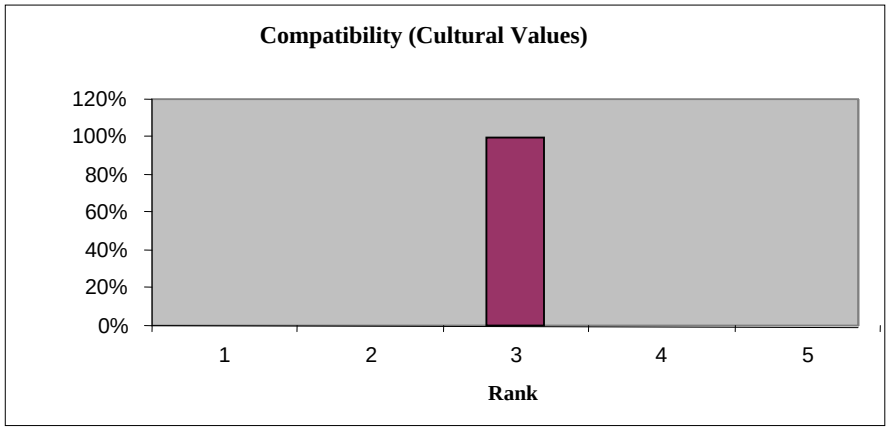


Figure 4-90 Compatibility (Past Experience)

Figure 4-91 Compatibility (Name)

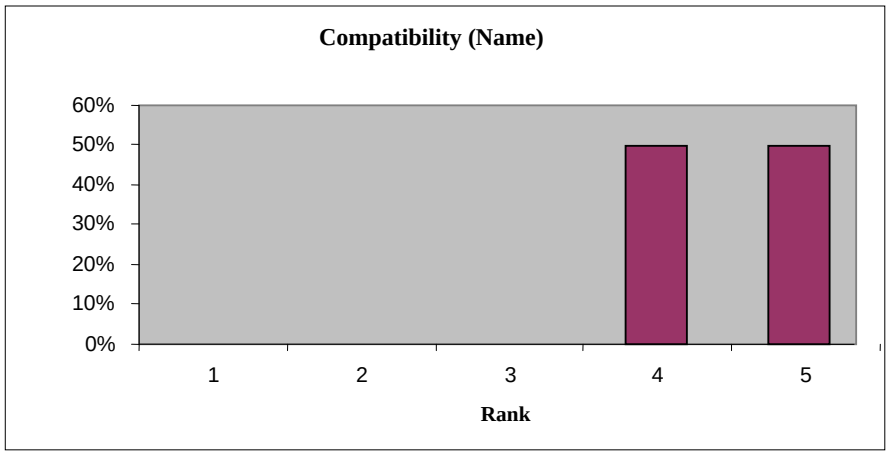


Figure 4-92 Compatibility

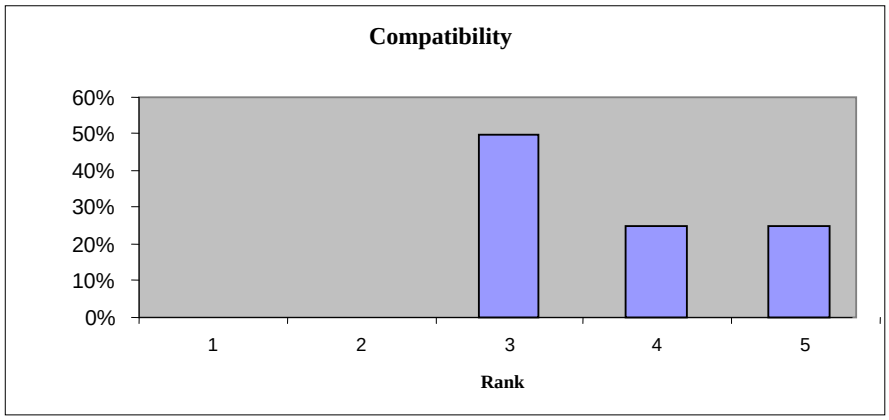


Figure 4-93 Simplicity (Use-1)

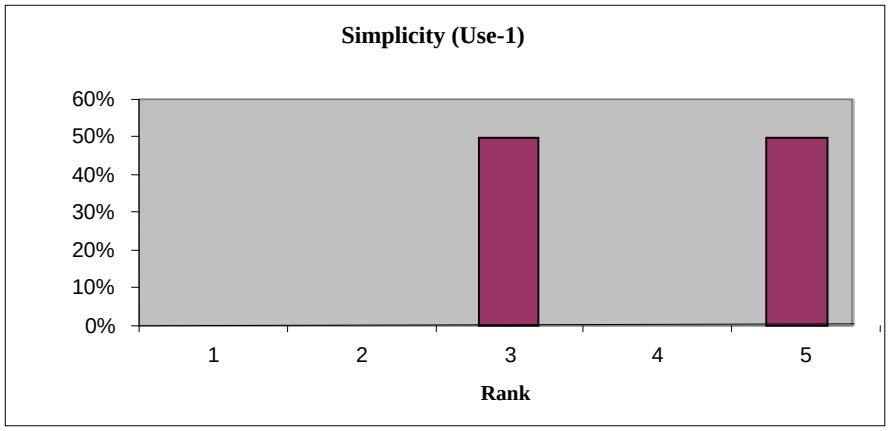


Figure 4-94 Simplicity (Use-2)

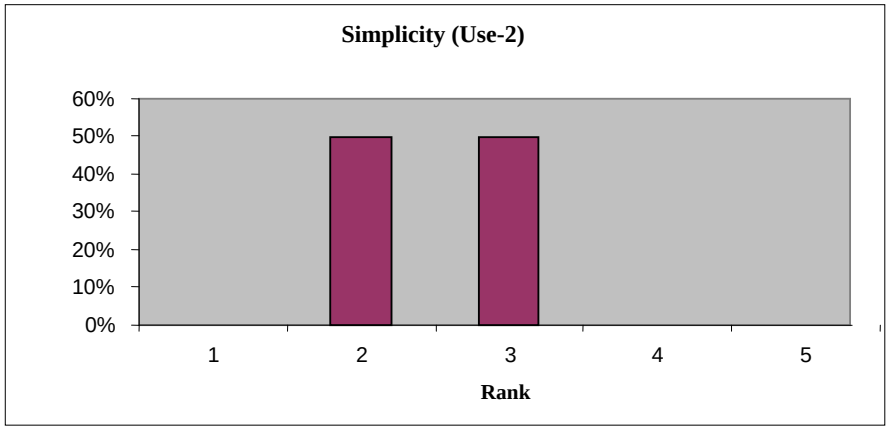


Figure 4-95 Simplicity (Use-Combined)

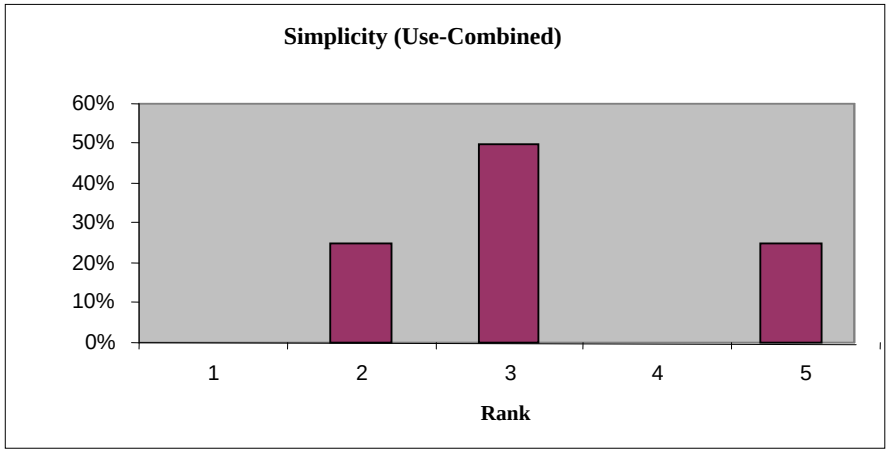


Figure 4-96 Simplicity (Understanding)

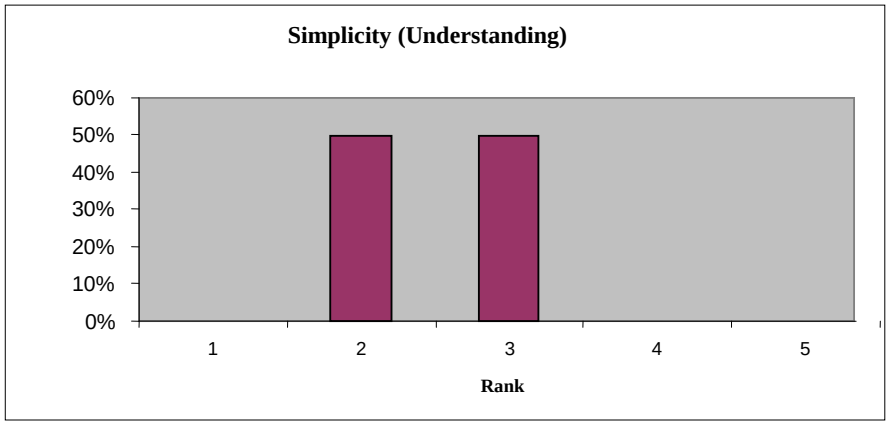


Figure 4-97 Simplicity

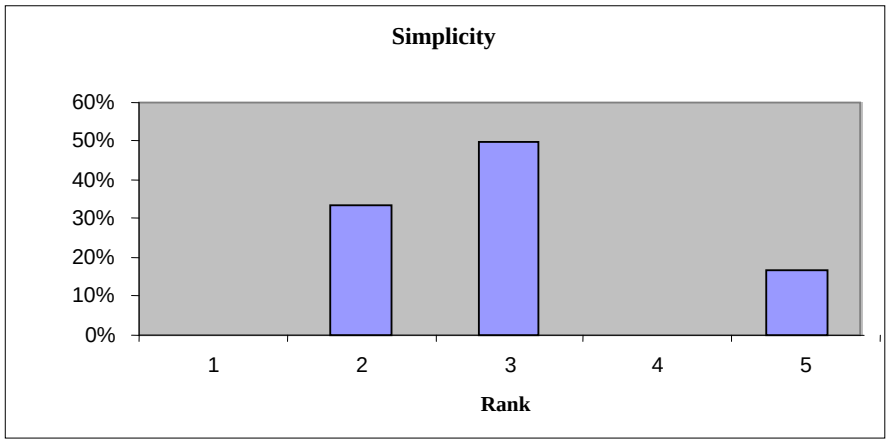


Figure 4-98 Trialability (Installment Basis)

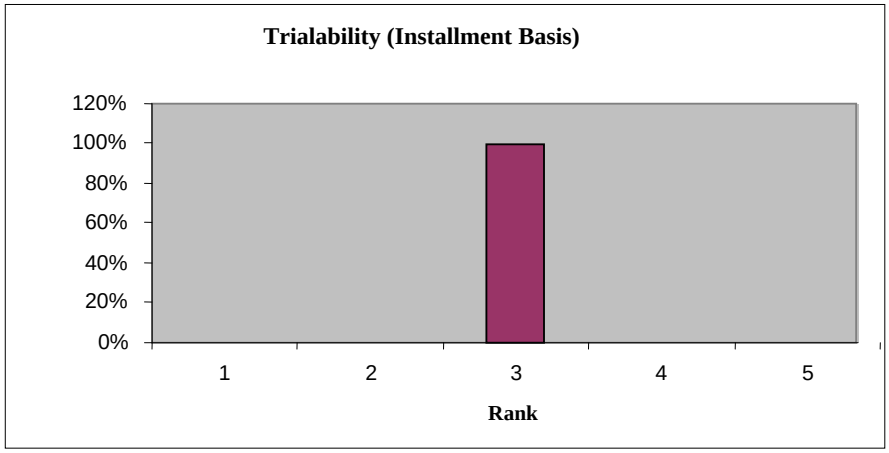


Figure 4-99 Trialability (Ease of Trying)

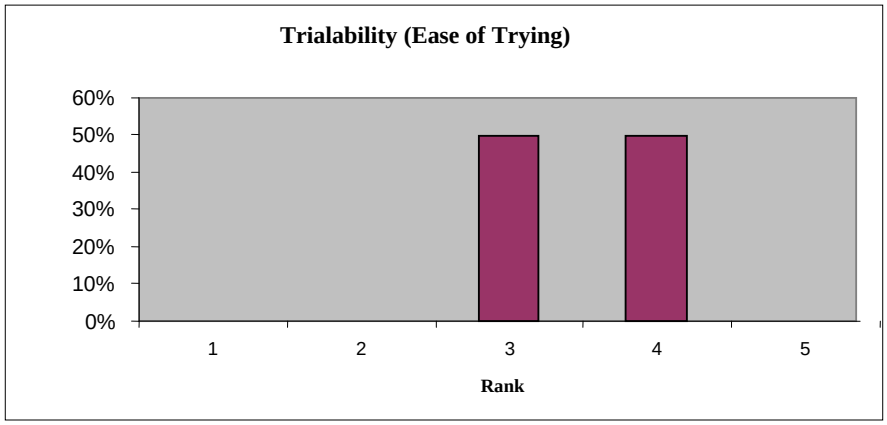


Figure 4-100 Trialability (Re-Invention)

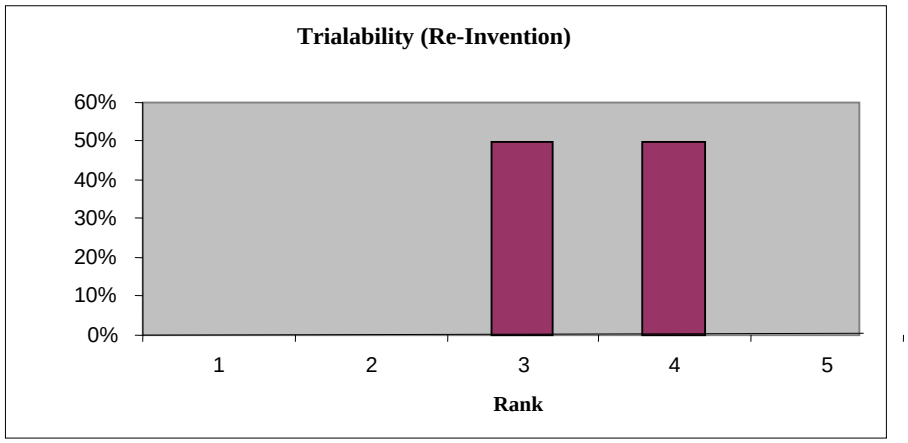


Figure 4-101 Trialability

Figure 4-102 Observability (Observation-1)

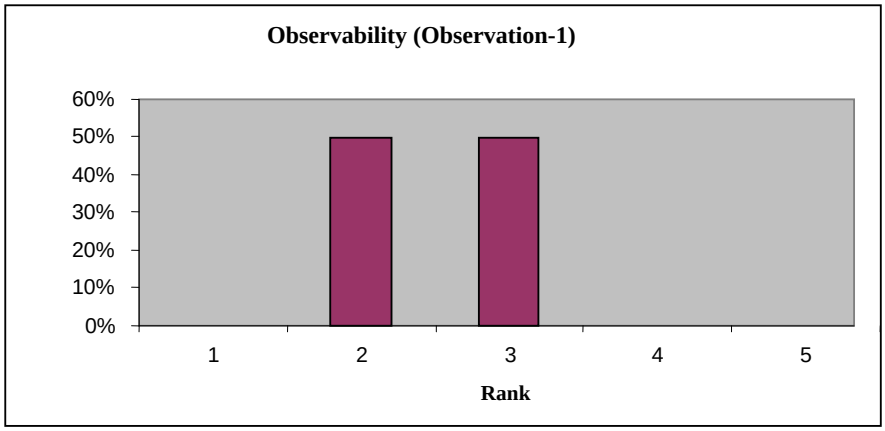


Figure 4-103 Observability (Observation-2)

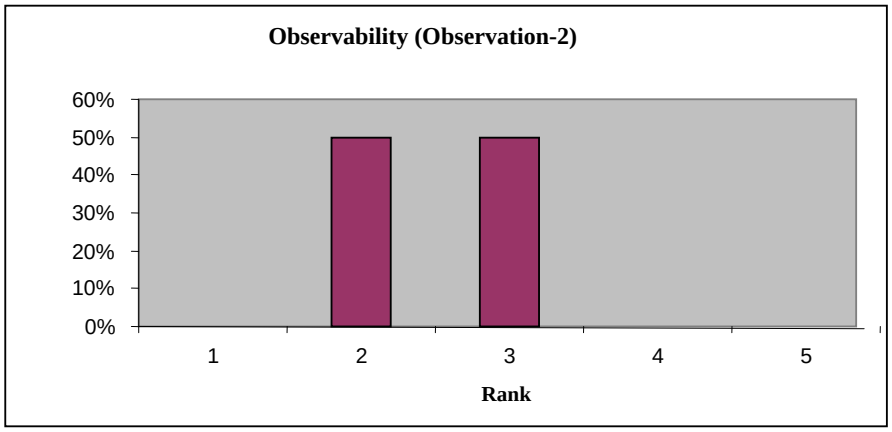


Figure 4-104 Observability (Observation-3)

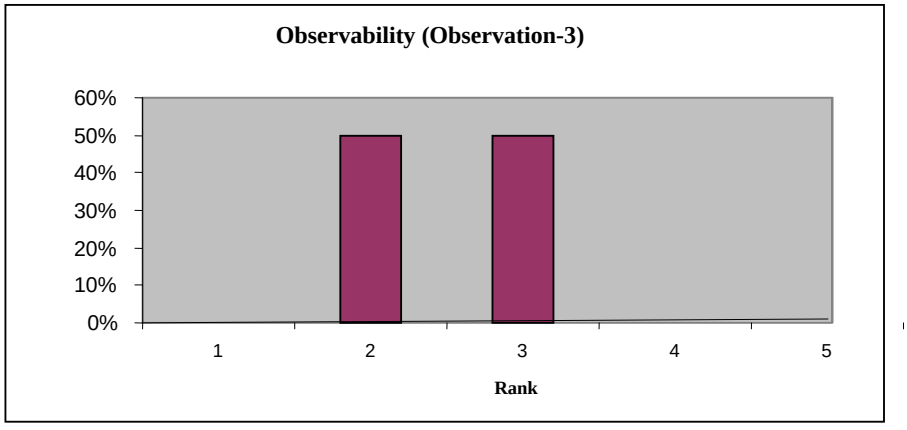


Figure 4-105 Observability (Observation-Combined)

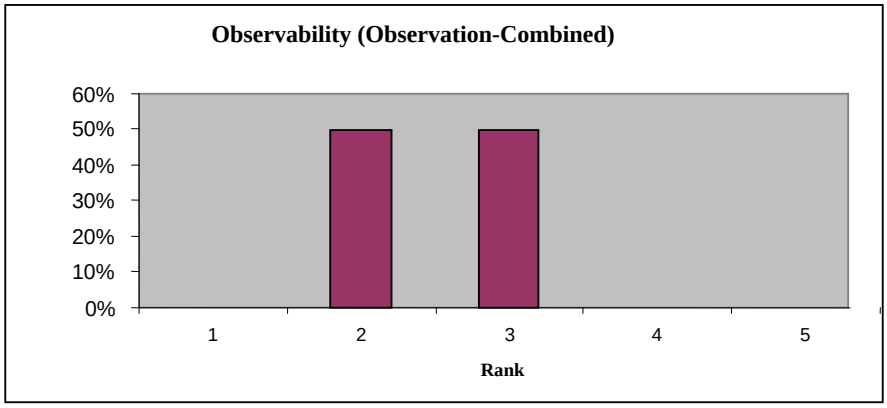


Figure 4-106 Observability (Describing)

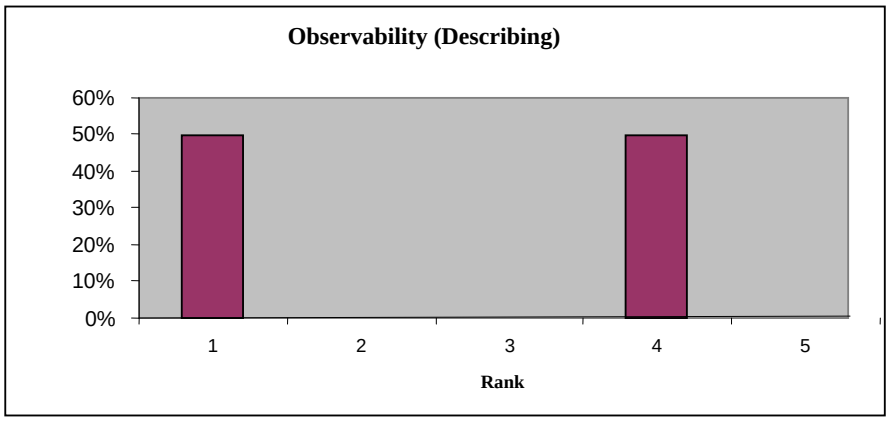
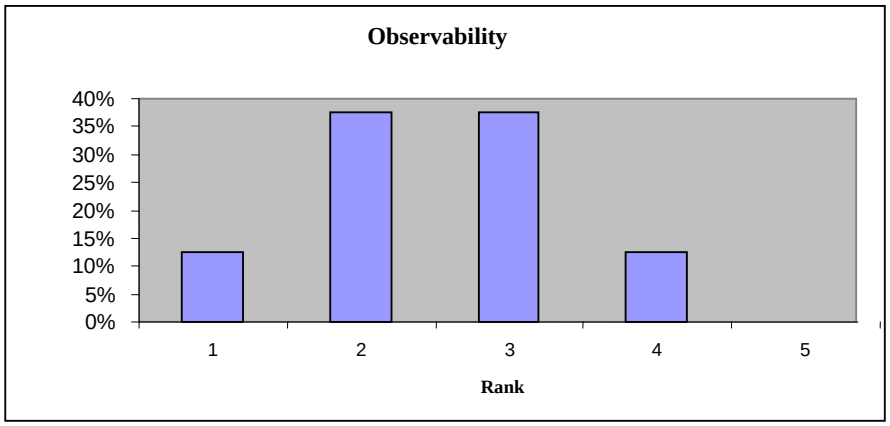
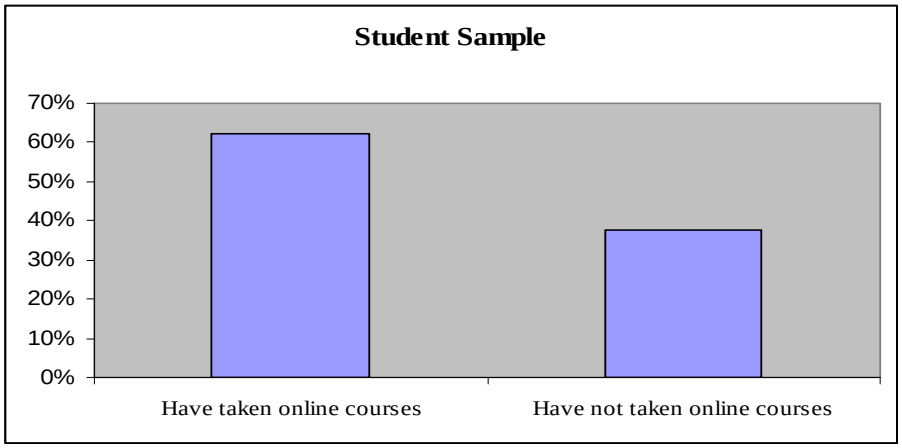
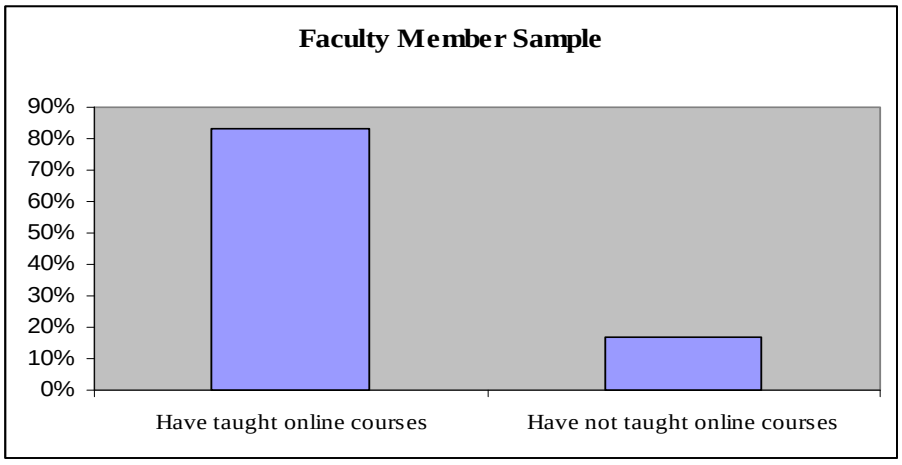


Figure 4-107 Observability



Student and Faculty Member Samples





Summary of Findings

Table 4-108 Students Who Have Taken Online Courses

Attributes	1 to 2	3	4 to 5	N	M	SD	CL (95%)	Interval	
Relative Advantage	35	19	46	48	3.14	1.16	0.13	3	3.27
Compatibility	26	32	42	48	3.17	0.91	0.13	3.04	3.3
Simplicity	20	18	62	48	3.53	0.94	0.15	3.38	3.68
Trialability	13	31	56	48	3.51	0.95	0.16	3.35	3.67
Observability	28	30	42	48	3.16	0.97	0.14	3.02	3.3
Total	24	26	50	48	3.30	0.99	0.14	3.16	3.44

Table 4-109 Students Who Have Not Taken Online Courses

Attributes	1 to 2	3	4 to 5	N	M	SD	CL (95%)	Interval	
Relative Advantage	29	36	35	29	3.12	1.07	0.16	2.96	3.28
Compatibility	37	41	23	29	2.82	0.91	0.17	2.65	2.99
Simplicity	25	54	22	29	3.01	0.77	0.16	2.85	3.17
Trialability	8	47	45	29	3.49	0.82	0.17	3.32	3.66
Observability	14	41	46	29	3.34	0.77	0.14	3.2	3.48
Total	23	44	34	29	3.16	0.87	0.16	3.00	3.32

Table 4-110 Faculty Members Who Have Taught Online Courses

Attributes	1 to 2	3	4 to 5	N	M	SD	CL (95%)	Interval	
Relative Advantage	51	18	30	10	2.67	1.34	0.35	2.32	3.02
Compatibility	28	20	53	10	3.43	1.08	0.35	3.08	3.78
Simplicity	44	17	40	10	3.03	1.22	0.45	2.58	3.48
Trialability	50	10	40	10	2.77	1.22	0.46	2.31	3.23
Observability	23	28	51	10	3.28	1.06	0.34	2.94	3.62
Total	39.2	18.6	42.8	10	3.036	1.184	0.39	2.646	3.426

Table 4-111 Faculty Members Who Have Not Taught Online Courses

Attributes	1 to 2	3	4 to 5	N	M
Relative Advantage	34	33	33	2	2.92
Compatibility	0	50	50	2	3.75
Simplicity	33	50	17	2	3
Trialability	0	67	33	2	3.33
Observability	51	38	13	2	2.5
Total	23.6	47.6	29.2	2	3.1

Analysis of Findings

The results. Out of 77 respondents, 48 have taken online courses. The cumulative attributes of online learning received 24% negative response, 26% no opinion response, and 50% positive responses.

For the attribute of relative advantage, figure 4-108 indicates a 35% negative response, 19% no opinion response, and 46% positive response. The sample mean is at 3.14 with a Confidence Level of 0.13. The population mean is assumed to be between 3.01 and 3.27. The percentage for positive response does not meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of relative advantage and adoption of online learning does not exist.

For the attribute of compatibility, figure 4-108 indicates a 26% negative response, 32% no opinion response, and 42% positive response. The sample mean is at 3.17 with a Confidence Level at 0.13. The population mean is assumed to be between 3.04 and 3.30. The percentage for positive response does not meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of compatibility and adoption of online learning does not exist.

For the attribute of complexity (simplicity), figure 4-108 indicates a 20% negative response, 18% no opinion response, and 62% positive response. The sample mean is at 3.53 with a Confidence Level at 0.15. The population mean is assumed to be between 3.38 and 3.68. The percentage for positive response does meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of complexity (simplicity) and adoption of online learning exists.

For the attribute of trialability, figure 4-108 indicates a 13% negative response, 31 no opinion response, and 56% positive response. The sample mean is at 3.51 with a Confidence Level at 0.16. The population mean is assumed to be between 3.35 and 3.67. The percentage for positive response does meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of trialability and adoption of online learning exists.

For the attribute of observability, figure 4-108 indicates a 28% negative response, 30% no opinion response, and 42% positive response. The sample mean is at 3.16 with a Confidence Level at 0.14. The population mean is assumed to be between 3.02 and 3.30. The percentage for positive response does not meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of observability and adoption of online learning does not exist.

Out of 77 respondents, 29 have not taken an online course yet. The cumulative attributes of online learning received 23% negative response, 44% no opinion response, and 34% positive responses.

For the attribute of relative advantage, Figure 4-109 indicates a 29% negative response, 36% no opinion response, and 35% positive response. The sample mean is at 3.12 with a Confidence Level of 0.16. The population mean is assumed to be between 2.96 and 3.28. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of relative advantage and rejection of online learning does not exist.

For the attribute of compatibility, figure 4-109 indicates a 37% negative response, 41% no opinion response, and 23% positive response. The sample mean is at

2.82 with a Confidence Level at 0.17. The population mean is assumed to be between 2.65 and 2.99. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of compatibility and rejection of online learning does not exist.

For the attribute of complexity (simplicity), figure 4-109 indicates a 25% negative response, 54% no opinion response, and 22% positive response. The sample mean is at 3.01 with a Confidence Level at 0.16. The population mean is assumed to be between 2.85 and 3.17. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of complexity (simplicity) and rejection of online learning does not exist.

For the attribute of trialability, figure 4-109 indicates an 8% negative response, 47% no opinion response, and 45% positive response. The sample mean is at 3.49 with a Confidence Level at 0.17. The population mean is assumed to be between 3.32 and 3.66. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of trialability and rejection does not exist.

For the attribute of observability, figure 4-109 indicates a 14% negative response, 41% no opinion response, and 46% positive response. The sample mean is at 3.34 with a Confidence Level at 0.14. The population mean is assumed to be between 3.20 and 3.48. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of observability and rejection of online learning does not exist.

Now, we focus on the analysis from the perspective of faculty members who have taught and who have not taught online courses in the College of Professional Studies.

Out of 12 respondents, 10 have taught online courses. The cumulative attributes of online teaching received 39% negative response, 19% no opinion response, and 43% positive responses.

For the attribute of relative advantage, figure 4-110 indicates a 51% negative response, 18% no opinion response, and 30% positive response. The sample mean is at 2.67 with a Confidence Level of 0.35. The population mean is assumed to be between 2.32 and 3.02. The percentage for positive response does not meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of relative advantage and adoption of online teaching does not exist.

For the attribute of compatibility, figure 4-110 indicates a 28% negative response, 20% no opinion response, and 53% positive response. The sample mean is at 3.43 with a Confidence Level at 0.35. The population mean is assumed to be between 3.08 and 3.78. The percentage for positive response does meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of compatibility and adoption of online teaching exists.

For the attribute of complexity (simplicity), figure 4-110 indicates a 44% negative response, 17% no opinion response, and 40% positive response. The sample mean is at 3.03 with a Confidence Level at 0.45. The population mean is assumed to be between 2.58 and 3.48. The percentage for positive response does not meet the 50

percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of complexity (simplicity) and adoption of online teaching does not exist.

For the attribute of trialability, figure 4-110 indicates a 50% negative response, 10% no opinion response, and 40% positive response. The sample mean is at 2.77 with a Confidence Level at 0.46. The population mean is assumed to be between 2.31 and 3.23. The percentage for positive response does not meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of trialability and adoption of online teaching does not exist.

For the attribute of observability, figure 4-110 indicates a 23% negative response, 28% no opinion response, and 51% positive response. The sample mean is at 3.28 with a Confidence Level at 0.34. The population mean is assumed to be between 2.94 and 3.62. The percentage for positive response does meet the 50 percent minimum criteria of acceptance; therefore, a positive relationship between the attribute of observability and adoption of online teaching exists.

Out of 12 respondents, 2 have not taught an online course yet. The cumulative attributes of online learning received 24% negative response, 48% no opinion response, and 29% positive responses.

For the attribute of relative advantage, Figure 4-111 indicates a 34% negative response, 33% no opinion response, and 33% positive response. The sample mean is at 2.92. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of relative advantage and rejection of online teaching does not exist.

For the attribute of compatibility, figure 4-111 indicates a 0% negative response, 50% no opinion response, and 50% positive response. The sample mean is at 3.75. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of compatibility and rejection of online teaching does not exist.

For the attribute of complexity (simplicity), figure 4-111 indicates a 33% negative response, 50% no opinion response, and 17% positive response. The sample mean is at 3.00. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of complexity (simplicity) and rejection of online teaching does not exist.

For the attribute of trialability, figure 4-111 indicates a 0% negative response, 67% no opinion response, and 33% positive response. The sample mean is at 3.33. The percentage for negative response does not meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of trialability and rejection of online teaching does not exist.

For the attribute of observability, figure 4-111 indicates a 51% negative response, 38% no opinion response, and 13% positive response. The sample mean is at 2.50. The percentage for negative response does meet the 50 percent minimum criteria of acceptance; therefore, a negative relationship between the attribute of observability and rejection of online teaching exists.

Support of findings for the problem statement

The findings did not support the four hypotheses of the problem statement for this research project. It did not meet the two criteria of acceptance mentioned in earlier

chapter. It was important to stress that the findings were not representative of the population because a random sampling method was not employed to gather the data. If a random sampling method were employed, the findings may have been different. At least, the findings did not suffer from the bias of self-selection.

Chapter 5 – Conclusions and Recommendations

Summary of Findings

The results for students who have taken online courses in the College of Professional Studies did not support the first hypothesis. The attributes of simplicity and trialability are the only two that are positively related. For the attribute of simplicity, students perceived that it was easy to use WebCT. Also, the assignment instructions posted were clear and detail. As for the attribute of trialability, they perceived the ease of signing up online courses was high.

The overall percentage is 50% and the sample mean is 3.30, so it satisfied the requirement for this attribute to be positively related to the adoption of online learning by student. However, the two most important attributes do not show any relationship. They did not perceive online courses to have relative advantage and be compatible with their values. These two attributes are most important because they reflect on the innovation itself. The attributes of trialability and observability are not directly part of the innovation.

The results for students who have not taken online courses in the College of Professional Studies do not support the second hypothesis. None of the attributes reached the 50 percent requirement on the negative responses to show a negative relationship. However, it did not reach the 50 percent requirement on the positive response. The results suggest that students who have not taken online courses were not due to their negative perception of online learning. One possible explanation is that they were not aware of the relative advantage. This explanation may have some validity because the results for the attribute of observability are not significant. Another possible explanation

has to do with the communication channel. Perhaps, the school is not employing the right communication channel to diffuse this innovation. Unfortunately, this explanation is not verifiable in this research project.

The conclusions were also supported by frequency distribution of potential future enrollments of students who taken and student who have not taken online courses. For the students who have taken online courses, the prospect of them taking more online courses in the future did not meet the 50 percent minimum criteria of acceptance. As for the students who have not taken online courses, the prospect of them no taking online courses in future also did not meet the 50 percent minimum criteria of acceptance.

It is safe to propose that the five attributes of innovation diffusion were not driving force for taking neither to adopt nor reject online education. The other three elements of innovation diffusion in all probability influenced the students in the sample to have taken or not have taken online courses. Future researches should investigate how the elements of communication channels, time, and social systems affect the adoption rate of online education in the College of Professional Studies.

The results for faculty members who have taught online courses in the College of Professional Studies did not support the third hypothesis. Compatibility and observability are the only two attributes that are positively related. For the attribute of compatibility, faculty members perceived that teaching in an online environment help them with effectively working in the technical world. In addition, they were very comfortable with the term of distance education. For the attribute of observability, they were able to observe how their colleagues teach online courses. Furthermore, they were able to get feedback from each other regarding online teaching strategies.

Eventhough the attribute of compatibility was highly statistically significant, the result was very deceptive. The sub-dimension of name received 100 percent positive response, consequently, it skewed the results. The sub-dimensions of cultural values and past experience only received individual positive responses of 30 percent. These two sub-dimensions were more important because they were the primary attributes. Therefore, it would be secure to conclude that the compatibility factor was not conclusive.

The results for faculty members who have not taught online courses in the College of Professional Studies did not support the fourth hypothesis. The only attribute that was negatively related was observability. Overall, they did not perceive that online teaching was widespread. Naturally, the availability of feedback to improve the delivery of online teaching would be low.

Similar to the students, the main attributes of relative advantage, compatibility, and complexity were not the driving forces in the adoption or the rejection process. The other three elements of innovation diffusion were likely the factors that influenced the faculty members in the sample to have taught or not have taught online courses. Likewise, future researches should investigate the relationship between the other three elements of innovation diffusion and the adoption rate of online education by the faculty members.

In the introduction of Chapter One, the researcher argued that it would be problematic for Hawaii Pacific University of the College of Professional Studies for both the students and faculty members to not perceive the attributes of online education to be positive related to their adoption. The school administrators should examine options of

whether to alter the attributes of the online education to fit the students and faculty member or change the students and faculty members to fit the online education.

Implications of findings to problem statement

The findings seem to suggest that respondents who have adopted online education did not perceive it to be better than traditional on-campus education. In addition, it implied that it was not compatible with their values. In the student sample, 48 out of 77 respondents have taken online courses, but they did not perceive high relative advantage and compatibility. In the faculty member sample, 10 out of 12 respondents have taught online courses, but they did not perceive high relative advantage. The compatibility factor was also questionable. Other factors may be the reasons why there are high rates of adoption. This implies that this innovation of online education may not be appropriate for these two stakeholders.

Dr. Christensen (2003) identified online education to be a form of disruptive innovation. A disruptive innovation almost always appears to be lower in performance in terms of the attributes that mainstream adopters care about. It brings to the market a very different value scheme.

From the survey responses, students did not perceive online education to save them money. They actually perceived that learning was made more difficulty. They believed that it took more time to do the readings and assignments. The primary use of e-mail for communication was viewed with annoyance. As for faculty members, they did not perceive any financial advantage with teaching online courses. They cited that online teaching required more of their time for course preparation. Similar to the students, they were not comfortable with electronic communication. Even though the results showed a

positive relationship between compatibility and the adoption of online teaching, it may be misleading. The extremely high positive response skewed the results. They did not perceive online teaching to be consistent with their cultural values and past experience.

Dr. Christensen (2003) did not recommend an organization to adopt a disruptive innovation to serve its current internal and external customers. He claimed the best strategy is to create an independent organization to take on the disruptive innovation. People who embrace this form of innovation should be the logical choice to lead without institutional restraints. They will diligently search for new customers who will get excite about the disruptive innovation.

Similarly, HPU administrators may find professors who believe in online education to form an independent college that offers only online degree programs. Naturally, they would find students who want to take online courses because it offers them relative advantage over traditional on-campus classes. Traditional students who do not want to adopt online education are not forced to register online courses.

Dr. Christensen (2003) did suggest two other strategies to nurture disruptive innovations. One strategy is to change the organization's resources to implement disruptive innovation. Unfortunately, most managers will not allocate limited and strategic capital and financial resources to foster new products or ideas that are lower performance and little market demand. It is career suicide for any manager to make such a proposal. This difficulty is attributable to the incompatible values, and it is related to the second strategy. The second strategy is for an organization to engage in culture change. Unfortunately, this strategy is difficult and time consuming. Culture change is often encountered with strong resistance because people are not comfortable with change.

Implications of findings to previous research

The findings in this research project supported some of the findings of previous innovation diffusion research projected mentioned in Chapter 2. For students, it confirmed the results of the only research article that focused on the diffusion of online education of students. Complexity (simplicity) and trialability were positively related with the adoption of online learning. As for faculty members, the findings of this research project and other research articles confirmed that observability was positively related to the adoption of online teaching.

The implications of these agreed findings are that HPU administrators need to do these things to increase the adoption rates of students and faculty members in the College of Professional Studies and HPU itself. In order to increase the adoption rate of students, HPU administrators need to make the registration process simple. Also, they should provide options for students to drop an online course with an on-campus course if things did not work out form them. As for faculty members, HPU administrators should ample and supportive staff. The primary responsibility is to train faculty members to effectively use the software. Unfortunately, this type of training is not sufficient for faculty members. Support staff needs to have the skill and knowledge to provide effectual teaching strategies for the online environment. Many faculty members are experts in their respective fields, but they may not be experts in education, especially online education. Besides training, faculty members need to have the opportunity to observe and interact with other faculty members who use effective teaching strategies. The sharing of best practices is a critical component.

Bibliography

Adler, N.J. (2002). *International dimensions of organizational behavior*, 4th Ed. Cincinnati, OH: South-Western.

In this book, Nancy Adler explored various topics of organizational behavior in the global context. She touched on issues such as cultural dilemmas, negotiation, international assignments, and global leadership.

Barlow, J.F. (2005). *Excel models for business and operations management*, 2nd Ed. West Sussex, England: John Wiley & Sons, Ltd.

This book is written to train students in using Microsoft Excel to solve statistical problems with Excel formulas. The sections of frequency distribution and confidence level were most relevant to this research project.

Christensen, C.M. (2002). *The innovator's dilemma*. New York, NY: Harper Business Essentials.

In this book, Dr. Christensen argued that successful managers need to capture disruptive innovation to grow. A disruptive innovation is an innovation that initially appears to be inferior in performance. He cited that online education is an example of disruptive technological innovation.

Dooley, K.E. & Murphrey, T.P. (2000). How the Perspectives of Administrators, Faculty, and Support Units Impact the Rate of Distance Education Adoption. Retrieved May 22, 2006, from http://www.westga.edu/~distance/ojdla/winter34/dooley34.html.

The researchers investigated how the perspectives of administrators, faculty and support units impact the adoption rate of online education. They discovered that the support units have a significant impact. The support units need to train the faculty members in using the software and in formulating effective teaching strategy.

Doppelt, B. (2003). *Leading change toward sustainability*. Sheffield, UK: Greenleaf Publishing Limited.

Like John Kotter, Bob Doppelt offered an eight-step change process any organization can apply to successfully implement a change program. This model is more geared to sustainable development and social changes. Nonetheless, he agreed with John Kotter's position that top leaders are important in the success and sustainability of a change program.

Glover, J. (2006). Global diffusion networks: The global challenge. *Adaptive Options, 2(1)*, retrieved August 12, 2006.

Dr. Glover emphasized the benefits of online education, which he coined as global diffusion networks. People are not restricted by time and space. In addition, the cost of education is reduced due to lowering travel expenses. He also argued that instructors can hold students more accountable than traditional instructions.

Gorelick, C., Milton, N. & April, K. (2004). *Performance through Learning: Knowledge Management in Practice (Improving Human Performance). San Diego, CA:* Butterworth-Heinemann/Elsevier.

In this book, the authors discussed the benefits of knowledge management and virtual teams. They argued that synchronous collaboration is most appropriate when people are in different place and time.

Housel & Bell (2001). *Measuring and managing knowledge*. New York, NY: McGraw-Hill Companies, Inc.

In this book, Housel and Bell explored an emerging field in social sciences, and that is knowledge management. They placed a special emphasis on the measuring the return of knowledge. In one of the case study section, he focused on the future of online learning.

Hyland, A. (2003). To Teach Online or Not? The Decision Facing University Teachers. Retrieved May 22, 2006, from Google Scholar Web site: http://surveys.canterbury.ac.nz/herdsa03/pdfsnon/N1090.pdf.

This paper presents personal, university and societal issues that influence academic staff from the Department of Theology and Religious Studies at the University of Otago in deciding whether or not to teach online. Rogers' innovation diffusion model provided the theoretical framework for this study.

Isman, A. & Dabaj, F. (October, 2005). Diffusion of distance education in north Cyprus. *Turkish Online Journal of Distance Education, 6(4),* retrieved May 22, 2006, from http://tojde.anadolu.edu.tr/tojde20/pdf/article_6.pdf.

The researchers used the innovation diffusion models as the theoretical framework to investigate the adoption of online education by students. The researchers studied all four elements of innovation diffusion in their investigation. For the purpose of this research project, I only concentrated on the first element.

Jones, E.T., Lindner, J.R., Murphy, T.H., & Dooley, K.E. (2002). Faculty philosophical positions toward distance education: Competency, value, and educational technology support. *Online Journal of Distance Learning Administration, 5(1), Retrieved May 22, 2006, from* http://www.westga.edu/~distance/ojdla/spring51/jones51.html.

The researchers employed the innovation diffusion model to investigate how competency, value, and educational technology support affect faculty philosophical positions toward distance education. They discovered that the complexity of the technology affected how faculty members perceived distance education. Proper training and support were crucial in the adoption process.

Kotter, J. (1996). *Leading change*. Boston, MA: Harvard Business School Press.

John Kotter provided a comprehensive eight-step change model that can be applied to any type of organization. He emphasized the importance of top leadership involvement in order for any change program to receive support and to be sustainable.

Leady, P.D. & Ormrod, J.E. (2005). *Practical research: Planning and design*. 8th ed.

Upper Saddle River, NJ: Pearson Education, Inc.

This book was the primary source of guidance for the researcher. From the initial stage of formulating the problem statement to the stage of choosing a proper method for analysis, this book was extensively consulted. The researcher deviated from the suggestions of this book was due to the advices of the faculty supervisor.

Meyer, K.A. (2002). Does policy make a difference? An exploration into policies for

distance education. *Online Journal of Distance Learning Administration, 5(4), Retrieved*

May 22, 2006, from

http://www.westga.edu/~distance/ojdla/winter54/Meyer_policy_54.htm.

Dr. Meyer applied the diffusion model to the influence of policy on the adoption of distance education by faculty members. The researcher found that policies on compensation, workload, and training have an effect on the adoption rate. However, state funding and mission statement did not seem to influence the diffusion process.

Mwaura, C. (April, 2004). Influence of attributes of innovations on the integration of

web-based instruction by faculty members. *The Turkish Online Journal of*

Educational Technology, 3(2). Retrieved May 23, from

http://www.tojet.net/articles/326.htm.

Dr. Mwaura used the innovation diffusion to investigate the relationship between the five attributes of innovation and the adoption rate on online education by faculty members. The results of this study indicated that only relative advantage, compatibility, and complexity are significant. The attributes of trialability and observability were not factors in the adoption process.

Newton, R.R. & Rudestam, K.E. (1999). Your statistical consultant (Answers to your

data analysis questions). Thousand Oaks, CA: Sage Publications, Inc.

In this book, the authors provided a comprehensive coverage of various topics on statistics. It is not a workbook, but a reference source for novice researchers to consult. It provides detail explanations on topic that many statistic books only touched on.

Rischard, J.F. (2002). *High noon*. New York, NY: Basic Books.

In this book, Mr. Rischard laid out the 20 most pressing issues of this generation to solve. The digital divide is one the issues that creating the unevenness in the world. The Internet offers great potential, but not people have access to it.

Rogers, E.M. (2003). *Diffusion of innovations*, 5th Ed. New York, NY: Free Press.

The book "Diffusion of Innovations" is the bible of diffusion study. Almost all diffusion researchers use this book as guide in the diffusion research. I have based my research philosophy and methodology from this book.

Triandis, H.C. (2004). *Culture and social behavior*. New York, NY: McGraw-Hill.

Culture and Social Behavior explored how culture affects human behavior in a social context. The section on ethnocentrism helps to explain why innovation-bias exists in diffusion researches and campaigns.

Trompenaars, F. & Hampden-Turner, C. (2002). *21 leaders for the 21st century*. New

York, NY: McGraw-Hill.

In this book, Dr. Trompenaars and Dr. Hampden-Turner argued that the way to create win-win situations is to reconcile dilemmas. They identified seven cultural dilemmas that managers must reconcile. The concept of reconciliation is very similar to the concept of re-invention. In diffusion research, adopters often change the characteristics of an innovation to fit its needs and values.

Weiss, A. (2002). *Process consulting: How to launch, implement, and conclude*

successful consulting projects. San Francisco, CA: Jossey-Bass/ Pfeiffer.

The author provided a step by step process that consultants can use to effectively create change in organizations. The most important section of this book for this research project was on the issue of self-selection. Self-selection is a condition, which the results are influenced by personal bias. The way to avoid this bias is to obtain a minimum 30 percent return on the sample.

Appendix A - Institutional Review Board Project Application

Hawaii Pacific University
Institutional Review Board
Project Application

Please complete, save as Word file and send to msheridan@hpu.edu.

Study Title: Roger's Five Attributes of Innovation Diffusion on the Adoption Rate of

Investigator
Name: Truman Do
(Please check one) ☐ Faculty ☒ Student ☐ Outside Investigator
Phone:
Email: trumando@hotmail.com
Sponsoring HPU Faculty Member: G. Glover
(If Investigator is not an HPU faculty member)

Please attach a brief summary of the project. This should contain an explicit statement of the methods of data collection, including questionnaire (if any); who subjects will be and how they will be chosen; and how confidentiality of subjects will be protected. For questionnaires/surveys that will be returned anonymously, a statement that participation is voluntary should appear at the beginning of the form. For other studies, a copy of the informed consent form should be included with this package.

Category for Review:

Check on level of review (Exempt, Expedited, Full) for which you believe the project qualifies, as each criterion that your project meets.

☒ **Exempt from review (nil or minimal risk study, or already reviewed by an IRB)**

- ☐ Research involves ONLY investigation into or comparison of normal instructional strategies.
- ☒ Tests, interview, and surveys are unlikely to elicit emotion or place subjects at risk of civil/criminal liability or damage to their reputation, financial standing, employability, etc. AND information will not be recorded in such a way that subjects can be identified.
- ☐ Research involves only the study or analysis or existing data, documents, records, or specimens that are publicly available or recorded in such a way that subjects cannot be identified.
- ☐ If study involves ingestion of food: only wholesome food without additives in excess of USDA recommended levels is consumed.
- ☒ Brief informed consent will be done (except in the case of existing data, etc.)
- ☒ No use of vulnerable subjects (children, prisoners, pregnant women, mentally ill, etc.)
- ☐ Has already been approved by IRB at _____
  (Include copy of signed IRB approval form)

☐ **Expedited review (minor risk study)**
- ☐ Research and data collection methods are unlikely to elicit strong emotion and deception is not involved.
- ☐ Research involves only noninvasive, painless, and non-disfiguring collection of physical samples, such as hair, sweat, excreta.
- ☐ No use of vulnerable subject (children, prisoners, pregnant women, mentally ill, disabled, etc.).
- ☐ Data are recorded using noninvasive, painless, and non-disfiguring sensors or equipment, such as EKG, weighing scales, voice/video recording.
- ☐ Research involves only moderate levels of exercise in healthy volunteers.
- ☐ Research does not involve ingestion or drugs or use of hazardous devices.
- ☐ If existing data, documents, records, or specimens with identifiers are used, procedures are in place to ensure confidentiality.
- ☐ Informed consent process will be done (attach copy of informed consent form).
- ☐ Data will be kept confidential and not reported in identifiable fashion.

☐ **Full review required (more that minor risk)**
Attach a statement that describes the use of vulnerable subjects or the study procedures and conditions that place subjects at risk. Describe the precautions that will be taken to minimize these risks. Attach a copy of the informed consent form that will be used.

Certification by Principal Investigator:
The above represents a fair estimate of risks to human subjects.

Name	Title	Date

FOR IRB USE ONLY

Certification by IRB Chair: I have read this application and believe this research qualifies as:
- ☒ Exemption from IRB review
- ☐ Appropriate for expedited review, and
  - ☐ Approved
  - ☐ Disapproved
- ☐ Appropriate for review by the full IRB

Notes:

Mary S. Sheridan, PhD, ACSW (electronic signature)	6/19/06
IRB Chair	Date

Appendix B - Contact Information of the Dean and Faculty Members

Name	Title	E-mail	Phone Number/ Office
Gordon Jones	Dean of College of Professional Studies	gjones@hpu.edu	(808) 544-1181 MP333
Jerry Glover	Program Chair/ MAOC	jgloverocd@yahoo.com	(808) 544-0844
Crozier Garcia, Cheryl	Program Chair/ MAHRM	ccrozier@campus.hpu.edu	(808) 544-1178 MP327
Arthur Whatley	Program Chair/ MAGL	awhatley@hpu.edu	(808) 566-2490 MP247
Sodeman, William A.	Program Chair/ MSIS	wsodeman@hpu.edu	(808) 544-1174 MP323

Appendix C - Professional Features of SurveyMonkey.com Survey Tool

Features	Descriptions
No Limits	An unlimited number of questions can be created without additional charges.
Conditional Logic	Respondents skip non-applicable questions.
Required Answers	This function requires respondents to answer survey questions.
Randomize Answer Choices	This serves to reduce any unintended bias as result of the order of questions.
Add a Logo	The logo provides a sense of professionalism to the respondents.
Create Custom Themes	Researchers are able to customize the look and feel of the survey pages.
Generate Pop-Up Invitations	A pop-up invitation function can be cut and paste to a personal home page.
Custom Direct	Once the survey is completed, respondents will be directed to a page of choice.
Filter Results	Patterns of results can be generated for more effective analyses.
Shared Results	Respondents are able to view results without having access to the password.
Download Results	Researchers are able to download results onto their personal computer for further analyses.

Appendix D – Survey Instrument for Students

1. Have you taken an online class in the College of Professional Studies?
☐ Have taken
☐ Have not taken

2. Taking online courses save money that is associated with other school-related expenses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

3. I save a lot of time with online courses compared with face-to-face courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

4. I feel more comfortable expressing myself through emails and threaded discussion forum.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

5. I am able to see benefits of online learning over traditional face-to-face instruction immediately.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

6. Online courses allow me to be more flexible with my schedule.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

7. The overall cost of online courses is much lower than traditional courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

8. I feel that online learning will help me to effectively work in the technology-based work environment
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

9. Online learning is generally viewed favorably by employers.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

10. The experience of online courses is very similar with my past educational or professional experience.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

11. I feel comfortable with the term “distance education.”
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

12. Learning in the online environment is easy for me.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

13. The online learning software is easy to learn and navigate.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

14. The assignment instructions from the professors are clear and detailed.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

15. I can drop the online course and substitute it with a traditional face-to-face course if things do not work out.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

16. It is easy to sign up for an online course.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

17. I like the ability to personalize the course user interface to fit my needs.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

18. I have the opportunity to observe other students to work in an online environment.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

19. I am able see how other students operate the course user interface before me.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

20. I am able to receive feedback from other students who have experience with online courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

21. I understand benefits of online learning as described by others.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

22. How many online courses have you taken?
☐ 0 to 5 ☐ 6 to 10 ☐ 10 or more

23. Given the opportunity, would you continue to take more online courses after this semester?
☐ Highly Likely ☐ Likely ☐ Neutral ☐ Unlikely ☐ Highly Unlikely

24. What is your program of study?
☐ Master of Arts in Communication
☐ Master of Arts in Human Resource Management
☐ Master of Arts in Global Leadership
☐ Master of Arts in Organization Change
☐ Master of Business Administration
☐ Master of Science in Information Systems

Question Number	Variable Description	Dimensions	Variable Name	Variable Label
1	Adoption rate	Relative Speed	V01	1 – Have taken 2 – Have not taken
2	Saving money	Relative advantage (economic)	V02	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
3	Saving time	Relative advantage (saving of time)	V03	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
4	Expressing	Relative advantage (reduced discomfort)	V04	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
5	Immediacy	Relative advantage (immediacy)	V05	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
6	Do other things	Relative advantage (saving of effort)	V06	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
7	Overall cost	Relative advantage (low initial cost)	V07	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
8	Work environment	Compatibility (need)	V08	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
9	View favorably	Compatibility (cultural values)	V09	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree

10	Past working experience	Compatibility (past experience)	V10	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
11	Distance education	Compatibility (Name)	V11	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
12	Easy for me	Complexity (use)	V12	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
13	Learn and navigate	Complexity (use)	V13	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
14	Clear and detailed	Complexity (understanding)	V14	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
15	Substitute	Trialability (installment basis)	V15	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
16	Easy to sign up	Trialability (ease of trying)	V16	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
17	Ability to modify	Trialability (re-invention)	V17	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree

Question Number	Variable Description	Dimensions	Variable Name	Variable Label
18	See how other people work	Observability (observation)	V18	5 – Strongly agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly disagree
19	See how other people operate	Observability (observation)	V19	5 – Strongly agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly disagree
20	See and hear the reactions	Observability (observation)	V20	5 – Strongly agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly disagree
21	Understand the benefit & format	Observability (describing)	V21	5 – Strongly agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly disagree
22	How many	Not applicable	V22	1 – 0 to 5 2 – 6 to 10 3 – 10 or more
23	Continue to take	Not applicable	V23	1 - Highly likely 2 - Likely 3 - Neutral 4 - Unlikely 5 - Highly unlikely
24	Program of study	Not applicable	V24	- Master of Arts in Communication - Master of Arts in Human Resource Management - Master of Arts in Global Leadership - Master of Arts in Organizational Change - MBA - Master of Science in Information Systems

Appendix E – Survey Instrument for Faculty Members

1. Have you taught an online course in the College of Professional Studies at HPU?
☐ Have taught
☐ Have not taught

2. Teaching online courses save money that is associated with other school-related expenses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

3. I save a lot of time with teaching online courses compared to face-to-face courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

4. I feel more comfortable in expressing myself through emails and threaded discussion forum.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

5. I am able to see benefits of online learning over traditional face-to-face instruction immediately.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

6. Teaching online courses allow me to be more flexible with my schedule.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

7. The overall cost of online courses is much lower than traditional courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

8. I feel that teaching online courses help me to effectively work in the technology-based work environment.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

9. Experience in teaching online courses is generally viewed favorably by employers.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

10. The experience of teaching online courses is very similar with my past educational or professional experience.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

11. I feel comfortable with the term “distance education.”
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

12. Teaching in the online environment is easy for me.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

13. The online learning software is easy to learn and navigate.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

14. The instruction from trainers to use the software is detailed and easy to understand.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

15. I have the choice to discontinue in teaching online courses if things do not work out.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

16. It is easy to set up an online course.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

17. I like the ability to personalize the course user interface to fit my needs.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

18. I have the opportunity to observe other faculty members who work in an online environment.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

19. I am able see how other faculty members operate the course user interface before me.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

20. I am able to receive feedback from other faculty members who have experience in teaching online courses.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

21. I understand benefits of online learning as described by ther faculty members.
☐ Strongly agree ☐ Agree ☐ No opinion ☐ Disagree ☐ Strongly disagree

22. How many online courses have you taught?
☐0 to 5 ☐ 6 to 10 ☐ 10 or more

23. Given the opportunity, would you continue to teach more online courses after this semester?
☐ Highly Likely ☐ Likely ☐ No opinion ☐ Unlikely ☐ Highly Unlikely

24. What degree program (s) do you teach?
☐ Master of Arts in Communication
☐ Master of Arts in Human Resource Management
☐ Master of Arts in Global Leadership
☐ Master of Arts in Organization Change
☐ Master of Science in Information Systems
☐ Master in Business Administration

Question Number	Variable Description	Dimensions	Variable Name	Variable Label
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8	Work environment	Compatibility (need)	V08	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree

Question Number	Variable Description	Dimensions	Variable Name	Variable Label
9	Fit well	Compatibility (cultural values)	V09	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
10	Past working experience	Compatibility (past experience)	V10	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
11	Distance education	Compatibility (Name)	V11	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
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14	Clear and detailed	Complexity (understanding)	V14	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree
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16	Easy to sign up	Trialability (ease of trying)	V16	5 – Strongly agree 4 – Agree 3 – No opinion 2 – Disagree 1 – Strongly disagree

Question Number	Variable Description	Dimensions	Variable Name	Variable Label
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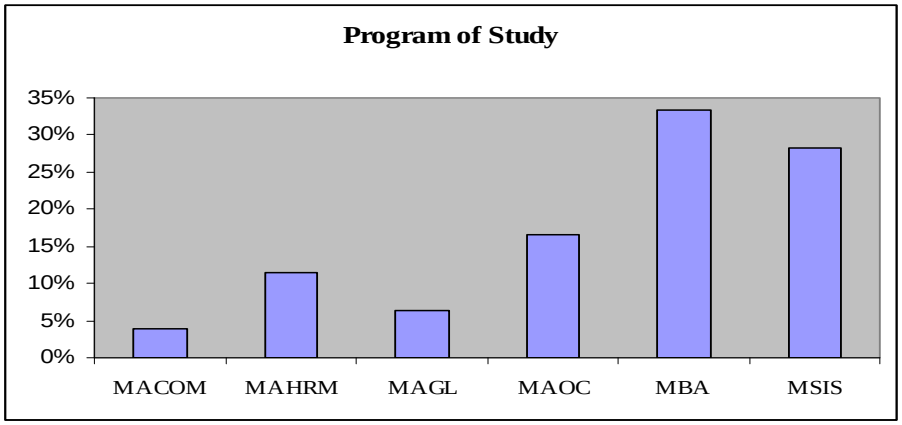
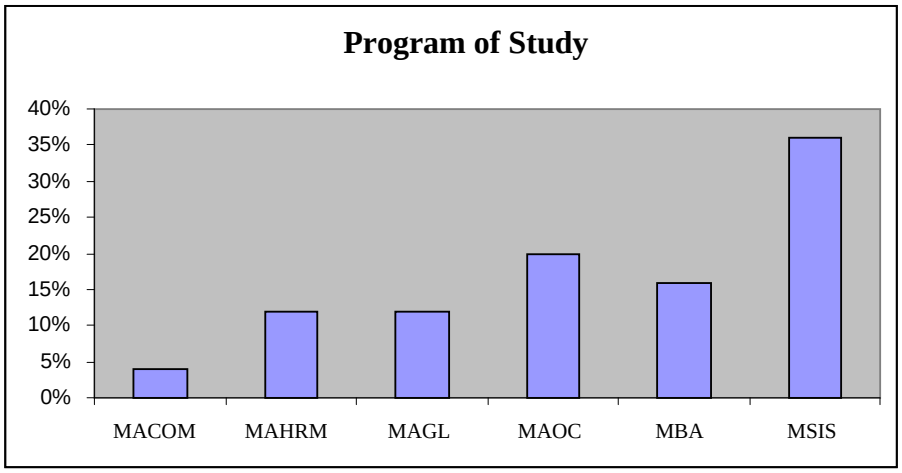
24	Program of study	Not applicable	V24	- Master of Arts in Communication - Master of Arts in Human Resource Management - Master of Arts in Global Leadership - Master of Arts in Organizational Change - MBA - Master of Science in Information Systems

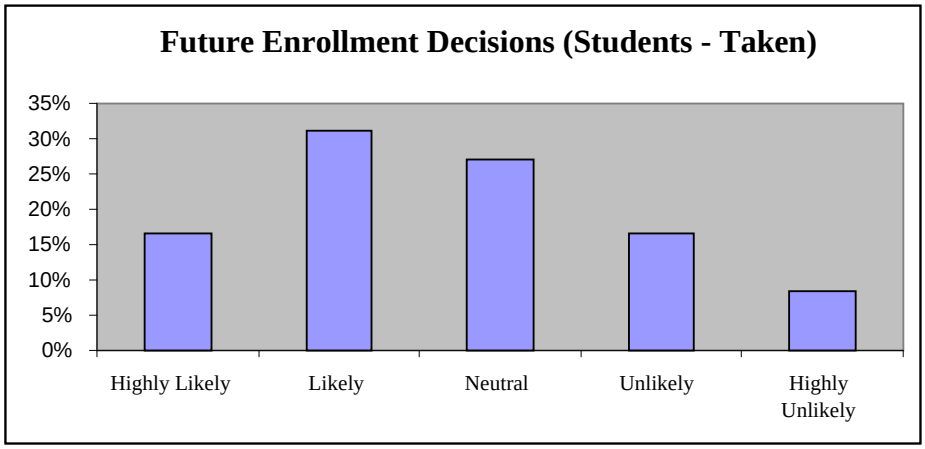
Appendix F - Analysis of Program of Study for Students

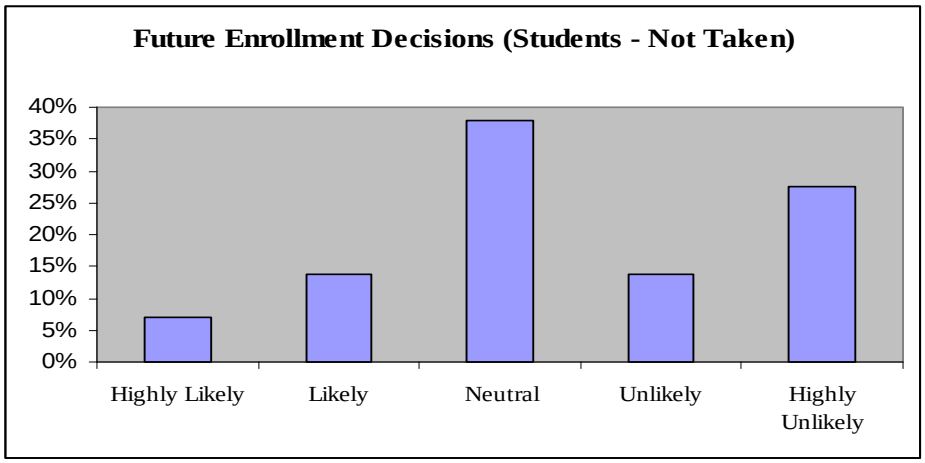


Appendix G - Analysis of Program of Study for Faculty Members

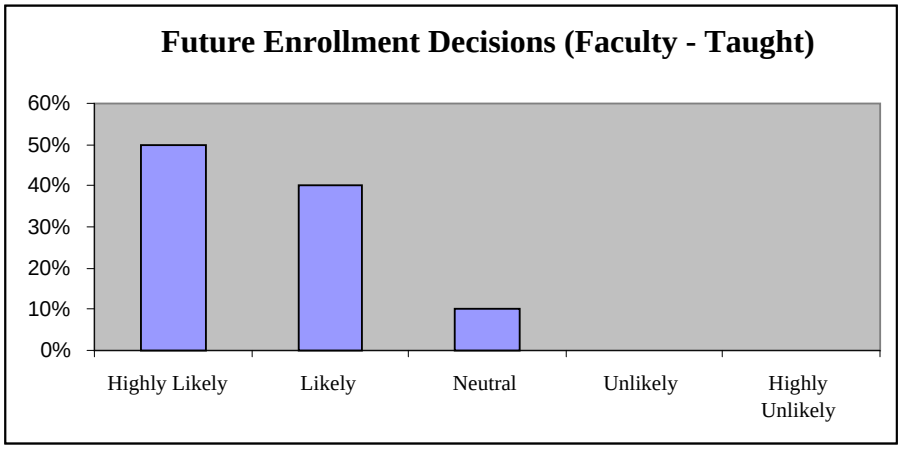


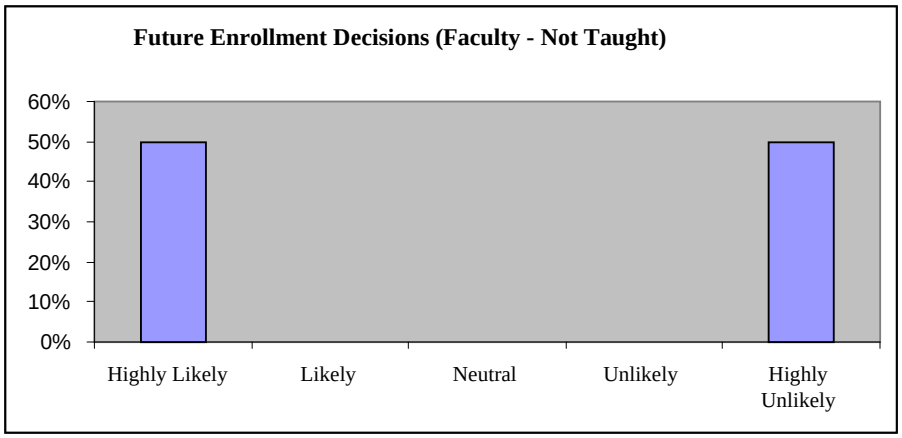
Appendix H: Future Enrollment Decisions of Students



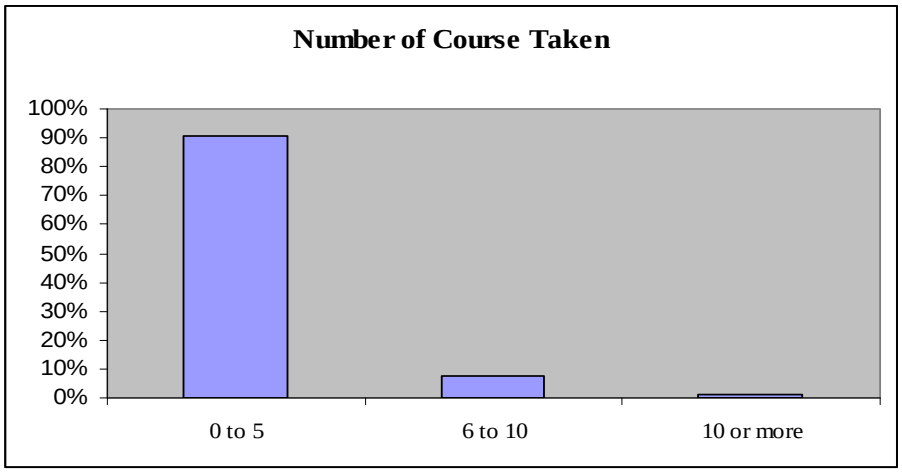


Appendix I: Future Enrollment Decisions of Faculty Members





Appendix J – Number of Course Taken by Students



Appendix K – Number of Course Taught by Faculty Members