MANAGEMENT EDUCATION VIA THE INTERNET: FACTORS FACILITATING AND INHIBITING THE ADOPTION OF WEBCT AT A FACULTY IN A HIGHER EDUCATION INSTITUTION

by

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DECLARATION

I, Carina America, hereby declare that the contents of this research project represent my own investigation, and that the project has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the University of the Western Cape.

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ABSTRACT

The emergence of the Internet and the World Wide Web in particular impact increasingly on the activities of commerce and industry and in the process also change the manner in which courses are delivered in higher education. Web-based learning has become an increasingly popular mode of delivery for educational programmes in higher educational institutions. Management education (i.e. academic courses offered to students in Management Faculties at higher education institutions) can benefit from an integrated technology, supported by systems to prepare future managers for the corporate world. Very often organisations are so impressed with the opportunities that technology can offer, that they overlook the climate in which it will be implemented. The successful deployment of e-learning technology is amongst others, dependent on the understanding of certain antecedent factors that influence technology adoption.

The aim of this study was to investigate the relationship between certain antecedent factors and the adoption of a specific technology called WebCT among lecturers within a business faculty at a higher education institution. The research strategy was a single-site case study and the methods were triangulated, using individual semi-structured interviews and a survey questionnaire. The study established certain facilitating and inhibiting factors and their impact on the perceived ease of use and the perceived usefulness of WebCT.

Adoption of innovation theories are well documented in the literature. The “diffusion of innovation” theory (Rogers, 1983) and the “Technology Acceptance Model” (Davis,

1989) are amongst those theories that have been tested in diverse studies and are relevant to the context of this research. These were therefore posited and used as the basis for this study.

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ABBREVIATIONS

CMSs	course management systems
CPUT	Cape Peninsula University of Technology
e-learning	electronic learning
HEIs	higher education institutions, i.e. colleges, universities and training organisations
WCMSs	web course management systems
WebCT	Web Course Tools
WWW	World Wide Web
TAM	Technology Acceptance Model

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND AND CONTEXTUALISATION

The emergence of the Internet is having an important impact on the delivery mode of management education, specifically because the Internet is a powerful, convenient medium for commerce and communication, while potentially offering endless possibilities for innovative teaching methods (Sharma and Maleyeff, 2003). Education is indirectly shaped by the corporate world because they are employing graduates who have the skills they require (Helmi, 2002). It has been argued that as managers are turning to technology for solutions to new problems, the education of future managers should integrate technology supported learning processes (Sharma and Meleyeff, 2003). As the business world embraces information technologies, more specifically the Internet, in their day-to-day activities, the adoption of the Internet as a support tool to traditional teaching methods is increasing rapidly.

Many higher education institutions (HEIs) are increasingly adopting electronic learning (e-learning) as a mode of delivery in an attempt to enhance the learning process. Commerce, education and technology have developed a symbiotic relationship, i.e. each element will continue to contribute to the development of online education (Helmi, 2002; Pather and Erwin, 2000). Effective online learning using the Internet can be best achieved by merging it with traditional face-to-face teaching and learning practices. Using the Internet in teaching provides exciting opportunities to both students and

lecturers that facilitate collaborative, project based activities (Damoense, 2003). The skills and knowledge that will be acquired through the use of the Internet may be advanced into the workplace. Pather and Erwin (2000) suggest that South African HEIs start taking steps to implement their programmes in a technologically enhanced learning environment, using resource-based learning methods. This is aligned to one of the priorities indicated by the objectives of South Africa's National Plan for Higher Education: "To produce graduates with the skills and competencies required to participate in the modern world in the 21st century" (Ministry of Education, 2001).

Educational institutions are confronted with increased competition to attract student enrolments and often turn to e-learning technologies and strategies to achieve a competitive edge. There is a trend by management structures of HEIs to adopt and support systems for e-learning, but they do not always anticipate the factors that could possibly inhibit the adoption of such new technologies (Spotts, 1999). In some cases huge capital investments are made in terms of infrastructure, equipment, technical support, training, etc. Often, HEIs use course management systems (CMSs), such as Web Course Tools (WebCT) to facilitate e-learning. One cannot dispute that learning through the Internet does not provide a "total solution", nor does it guarantee analytical and critical thinking or match the variety of interactions in seminars and tutorials. However, it has the potential to offer new means of self-expression and new opportunities for student engagement with course material (Mann, 2000).

The aim of this research project was to investigate the relationship between certain antecedent factors and the adoption of a specific technology, in this case WebCT within a specific faculty at a HEI. As this report demonstrates, the educational value in using the Internet in HEIs is an ongoing debate.

WebCT, a Web-based software programme, is aimed at assisting educators to effectively manage courses, enhance the learning programme, manage student progress, conduct on-line evaluations, and make course material available and evaluations accessible for the convenience of lecturer and student. It further allows the lecturer to design and manage an integrated course structure online, that includes training modules, chat rooms, bulletin boards, homepages, drop boxes for assignments and presentation capabilities. Students can view their marks and lecturers' comments (WebCT, 2004:[Online]). A standard web browser is used to access all content. WebCT is a comprehensive Web course management system (WCMS) that offers educators design tools for managing their Web courses online. These tools are customarily grouped together, interact under a course name and are protected by a password.

This research was conducted at the Cape Peninsula University of Technology (CPUT) in the Faculty of Management, Cape Town campus. The CPUT is a HEI, which according to its mission statement, "provides and facilitates high level of career and technology education and training in partnership with its stakeholders" (CPUT, 2005: [Online]). The Faculty of Management is the largest faculty at the Cape Town campus, comprising of 11 departments, and 73 academic members. The courses offered range from a National

Diploma (3 years full-time), BTech (one year full-time after completion of a National Diploma), and Masters in Technology (MTech) to Doctorate in Technology (DTech). The infrastructure and hardware for delivering online management education instruction in the faculty are efficient and available. Web-based learning can be facilitated through a learning management system for students while at the same time facilitating an electronic CMS for lecturers. The focus of this research was on the latter; the experiences, opinions and ideas of ***lecturers*** regarding certain key factors influencing WebCT adoption in the faculty.

1.2 AIMS AND OBJECTIVES

The broad aim of the research was to investigate the antecedent factors associated with the adoption and non-adoption of WebCT by lecturers.

More specifically the objectives were:

- to review the literature related to the diffusion of innovations and technology adoption theories,
- to conduct a case study on WebCT adoption at one faculty in a tertiary education institution,
- to investigate specifically the relationship between certain antecedent factors (identified in Research Model) and adoption, and
- to make recommendations as to how adoption problems could be addressed.

1.3 RATIONALE

The e-learning department at CPUT, Cape Town campus, started in June 2000 and its goal was to enhance the learning process through electronic learning. "We were looking at what we can do to add value to talk and chalk" (Smit, 2004). The department investigated and evaluated various systems on the basis of a few aspects, i.e. ease of design, training, student's perception and costs. According to the Director of e-learning, WebCT complied with all of these aspects and was affordable (Smit, 2004). WebCT was rolled out by means of information presentation sessions followed by introductory training sessions to the various faculties. In the Western Cape, the CPUT, University of Stellenbosch and the University of Cape Town use WebCT as a WCMS.

At the Faculty of Management, a number of staff members went on WebCT training but just a few use WebCT on a continuous basis and in a fully integrated manner with their teaching programmes. At CPUT, the Faculty of Management was ranked second lowest with regard to WebCT adoption, with the Faculty of Education rated as the lowest (Smit, 2004) and this rate has not improved significantly according to the e-learning Director. Senior Management at the CPUT view e-learning and related initiatives as part of the strategic vision of the institution, therefore the under-utilization of WebCT as a classroom Management tool within the majority of courses being offered in the Faculty of Management is a matter of concern (Smit, 2005).

In the context of understanding and addressing possible problems related to technology adoption this research will shed some light on factors that influence the adoption of e-learning technologies at tertiary institutions.

In general there are two entities that would derive benefit from this research namely:

- Faculty of Management, CPUT. This report describes the factors facilitating and inhibiting the adoption of WebCT in the faculty and makes recommendations on how to improve on the slow adoption rate of WebCT.
- As the custodian of WebCT, the e-learning department of CPUT may find this research useful in evaluating current strategies, e.g. to establish whether training in it's current form, has an impact on adoption.

1.4 PROBLEM STATEMENT AND HYPOTHESIS

Prior research conducted at the CPUT by the e-learning department, Cape Town campus found that the rate of adoption of the WebCT innovation was far below the targeted rate by the end of year 2003 (Smit, 2004). No significant improvement in the adoption rate has been achieved (Smit, 2005). Consequently, the rate of adoption of WebCT is considerably below target in the faculty, as the majority of staff have not adopted WebCT.

Research Question: In the Faculty of Management at the Cape Town campus, how do selected factors, including perceived ease of use (PEOU) and perceived usefulness (PU), relate to the non-adoption of WebCT by academics?

The following hypotheses were tested:

Hypothesis 1:	The complexity and ineffectiveness of training of WebCT impact negatively on the perceived ease of use of WebCT.
Hypothesis 2:	The complexity of ineffectiveness of WebCT training impact negatively on the perceived usefulness of WebCT.

Hypothesis 3:	Time constraint impacts negatively on the perceived ease of use of WebCT.
Hypothesis 4:	Time constraint impacts negatively on the perceived usefulness of WebCT.

Hypothesis 5:	Participant's attitude towards computers impacts positively on the perceived ease of use of WebCT.
Hypothesis 6:	Participant's attitude towards computers impacts positively on the perceived usefulness of WebCT.

Hypothesis 7:	Computer competency impacts positively on the perceived ease of use of WebCT.
Hypothesis 8:	Computer competency impacts positively on the perceived usefulness of WebCT.

Hypothesis 9: Perceived ease of use impacts positively on WebCT utilisation.

Hypothesis 10: Perceived usefulness impacts positively on WebCT utilisation.

1.6 RESEARCH DESIGN AND APPROACH

An in-depth case study approach was followed as the research strategy. This allowed the researcher to conduct the research in a particular "real-life" environment and to address the "how" and "why" question (Yin, 2002). The method of inquiry included qualitative methods, i.e. semi-structured interviews with a stratified random sample of 13 lecturers, and quantitative methods i.e. a structured questionnaire that was sent out to the entire population of full-time lecturers. Triangulation enabled the researcher to explore how the findings from the qualitative and quantitative approaches complemented each other. The methods adopted are discussed further in Chapter Three.

In order to explore the research approaches in a broader theoretical context, the specific focus of literature reviewed was on the well-documented adoption of innovation theories. The "diffusion of innovation" theory and the "Technology Acceptance Model" are amongst those theories that have been tested in diverse studies and are relevant to the context of this research. The research model, which is developed fully in Chapter Two, was derived from abovementioned theories and was used as the basis for the research strategy and research design applied.

1.7 SUMMARY

Very often organisations are so impressed with the opportunities that technology can offer, that they overlook the climate in which it will be implemented (Rosenberg, 2001). The successful deployment of any e-learning technology is dependent on the understanding of certain antecedent factors that influence technology adoption. It is within this context that the rationale for this research was placed. The focus of this research was to establish the factors that influence the adoption of an Internet-based technology in management education. The reference to management education is particularly pertinent because the research was conducted in the Management Faculty of a HEI. The Internet technology under research was WebCT, a CMS which a lecturer can use to create an environment conducive to improved learning.

This chapter provided the contextual framework for this research, the motivation for the adoption of CMSs, the research question that was formulated, stated aims and objectives, and an overview of the research design. Chapter Two provides a review of the literature and the theoretical framework for the formulation of the research model, which will form the basis of the research strategy and research design applied**.** Chapter Three explains the research design in detail and Chapter Four contains the analysis of the data and the findings of the research. Chapter Five details the significance of the findings and conclusions drawn from the results. It also details limitations of the research and recommendations for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 BACKGROUND

Educational technologies are increasingly integrated with the traditional face-to-face model of pedagogy. The focus of this research is to investigate certain antecedent factors that could inhibit or facilitate the adoption of one such technology, i.e. WebCT. This chapter contextualises the review of the literature and then develops the theoretical framework for the formulation of the research model.

There is increased interest for web-based and web-enhanced courses to be integrated into higher education instruction, demanding the services of online providers and course development tools (Helmi, 2002; Damoense, 2003; Broere, Geyser and Kruger, 2003). Universities and organisations have adopted new technologies in an attempt to improve their performance and to adapt to new environments (Holahan, Aronson, Jurkat and Schoorman, 2004; Rosenberg, 2004).

It has been argued that "compared to other infrastructures, the Internet is one of the more cost-effective ways of improving a country's educational system" (Helmi, 2002:243). Rosenberg (2001) agrees that Web-enabled learning cuts travel expenses, reduces time it takes to train people, and significantly reduces the need for classroom/instructor infrastructure. In contrast, Spotts (1999) argues that technology requires increased

investment and despite greater availability of technology in higher education, lecturers are not using technology in their instruction. Broere et al (2003) are of the view that at the institutional level, the introduction of new technologies for delivery of education compels the institutional culture to change. Institutional change on this scale requires analysis and planning in areas that reach beyond the technical realm (Broere et al., 2003).

Rosenberg (2001) is of the view that implementation of Internet-enabled learning or "e-learning" depends on building a strategy that optimises the technology within the institutional culture that is prepared and willing to use it. There are many uncertainties regarding the pedagogical and instructional management benefits of technology and the changes that the adoption of technology necessitates (Dooley, 1999). The skepticism in higher education to new technology is not a new phenomenon nor restricted to university level. As Spotts (1999) argues, the aversion to change or resistance to adoption of technology has a long history in education.

Despite a continuing interest in the process of adoption of innovations and the characteristics on innovative organisations, there is no real evidence to predict the extent to which a given organization will successfully implement a given technological innovation (Holahan et al., 2004; Damanpour, 1988).

There are different terms and definitions used in the adoption of innovations literature; the terminology used in this study is explained in the next section.

2.2 "DIFFUSION OF INNOVATION" AND "ADOPTION OF INNOVATION"

Turner and Turner (2002) argue that one of the persistent problems in synthesising and applying research in this field is the inconsistent use of terminology. Different terminology is often used to define adoption, such as "uptake", use, acceptance, implementation, routinisation, acquisition and assimilation. Adoption can also refer to technology use by end-users, or the decision to purchase technology. According to Rogers (1983) adoption is "a decision to make full use of an innovation as the best course of action available, while rejection is "a decision not to adopt an innovation". Instead Davis (1989) refers to adoption as "user acceptance".

Klein and Sorra (1996) are of the view that organisations adopt innovations, but individuals within the organisation implement the technology. Klein and Sorra (1996) focus on implementation effectiveness and argue that the organisation is responsible to create conditions for continued use. Implementation is seen as the stage that follows the decision to adopt the innovation (Holahn et al., 2004; Moore and Benbasat, 1991; Klein and Sorra, 1996). *As a result of the inconsistent use of terminology in the literature, for the purposes of this research the term adoption will refer to implementation of the technology by individuals or end-users.* The term "end-users" refers to the academic staff of the Management Faculty, and the term technology refers to WebCT.

Innovation refers to a technology or practice that is new to an organisation, regardless of whether other organisations have used the technology or practice previously (Nord and Tucker 1987 cited in Klein and Sorra, 1996). Rogers (1983:11) clarifies an innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption, "If the idea seems new to the individual, it is an innovation". Innovativeness, according to Rogers (1983), is the extent to which an individual or other unit of adoption is relatively more eager in adopting new ideas than the other members of a system. Since WebCT is a fairly new technology to CPUT, it will be regarded as an innovation.

It has been argued that studies about the diffusion of innovations are distinctly different to studies of the adoption of innovations (Damanpour, 1988). Diffusion researchers focus primarily in finding out how innovations diffuse among the members of a social system and why some innovations are diffused more rapidly than others. In this context the term "diffuse" refers to the spread or dissemination of a new idea (Rogers, 1983). Furthermore it focuses on the characteristics of innovations, e.g. cost, compatibility, etc and how it facilitates or impedes an innovation's rate of adoption (Rogers, 1983; Damanpour, 1988). With diffusion the focus is on the innovation: how to develop and market it to enhance to rapid acceptance. Adoption researchers focus on the organization, trying to identify characteristics or organisations that facilitate or inhibit innovation adoption (Damanpour, 1988).

The intent of this research is to explore respondents' reactions after the first knowledge of the innovation and forming an attitude toward the innovation (Rogers, 1983). Moore and

Benbazat (1991) refer to it as an "initial adoption" environment. In the organisational context where this research was conducted the individual adoption decision is voluntary and the focus will be on the perceptions of users. The degree of implementation effectiveness, and the different stages of adoption as outlined by Damanpour (1988), Klein and Sorra (1996), Roth, Panzano, Chaney-Jones and Crane-Ross (2003), and others, fall outside the scope of this research. This research seeks to establish how certain specific factors, including perceived ease of use (PEOU) and perceived usefulness (PU), relate to the non-adoption of WebCT by academics.

2.3 HISTORICAL PERSPECTIVE: TECHNOLOGY ADOPTION

The theoretical foundation for most technology adoption research is found in the diffusion of innovation literature (Ely, 1999; Moore and Benbasat, 1991; Schauer-Crabb 2002; Harris, Donaldson and Campbell, 2001). According to Moore and Benbasat (1991) one of the most cited reviews of the perceived characteristics in the adoption and diffusion of innovation literature is that of Rogers (1983). Rogers argues that by asking "why" a technology was adopted, the understanding of why some individuals are more receptive to an innovation than others will be increased (Schauer-Crabb, 2002). The literature suggests that the motivation to implement technologies, such as e-learning, is not always clearly defined: adoption takes place without fully understanding what purpose it serves and what the ultimate consequences of adopting such technologies are. Some of these issues are addressed in the following sections on the "diffusion of

innovation" theory and the "Technology Acceptance Model", which form the basis of this study.

2.3.1 DIFFUSION OF INNOVATION THEORY

The theoretical foundation for the research on the diffusion of innovation was based on the seminal work of Rogers in 1962. Diffusion of innovation research examines how various factors interact to facilitate or impede the adoption of a specific new product or practice among members of a particular group (Rogers, 1995). The four major factors that Rogers (1995) identified as influencing the diffusion process are the innovation itself, how information about the innovation is communicated, time, and the nature of the social system where the innovation is being implemented. From Rogers' original work in 1962, an array of studies on diffusion research has been conducted, resulting in various predictive models with the intent of utilizing the model to accelerate the adoption of the innovation (Harris et al., 2001). One such model is the Technology Acceptance Model (TAM).

2.3.2 TECHNOLOGY ACCEPTANCE MODEL (TAM)

The Technology Acceptance Model (TAM) (see Figure 2.1) is based on the work of Rogers's diffusion of innovation theory. It is designed by Fred Davis (1989) and is one of the most influential research models in studying the determinants of information technology usage (Chau, 2001; Harris et al., 2001). Davis developed the model in the

mid-1980s for the purpose of evaluating the market potential for a variety of then-emerging PC-based applications in the area of multi-media, image processing, and pen-based computing.

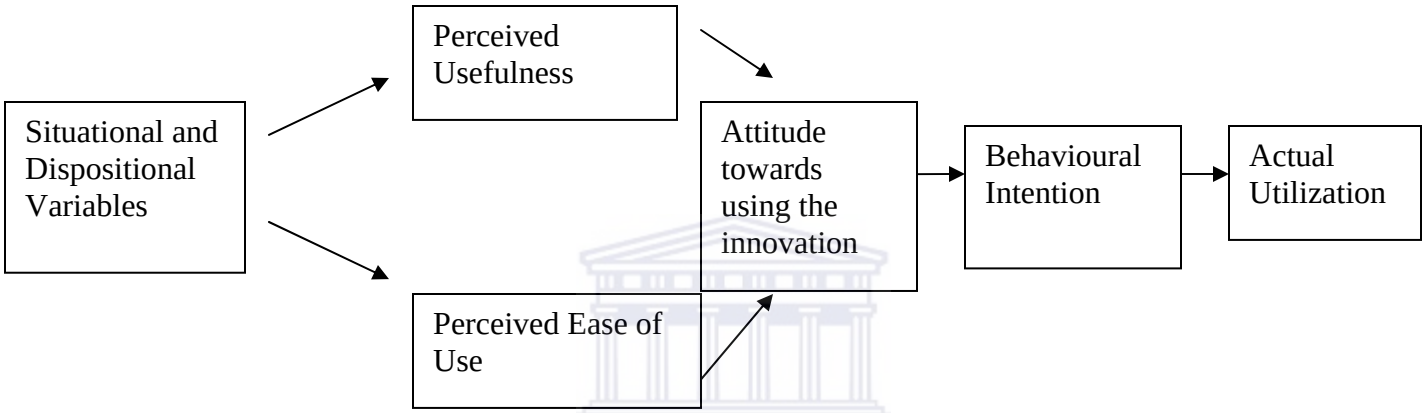
TAM stems from the Theory of Reasoned Action which is based on the assumption that reasoned action is the motive behind behavioural intention. The theory of reasoned action assumes two sets of antecedents affecting behavioural intentions: attitude based on beliefs about behaviour outcomes and subjective norms that are influenced by normative expectations of other people (Gefen, 2003).

The TAM provides a foundation to outline the impact of situational and dispositional factors on internal beliefs, attitudes (A) and behavioural intentions (BI) (Harris et al., 2001). In the context where acceptance is voluntary, the most pertinent question is: "What causes people to accept or reject information technology?"(Davis, 1989). Various studies over the years have identified predictors of user adoption such as: ease of use, systems design quality, perceptions of usefulness, download delay, data security, navigation, instability of the system, responsiveness, information content and accuracy and interactivity (Saeed, Hwang and Yi, 2003). According to Davis (1989), perceived ease of use (PEOU) and perceived usefulness (PU) have been identified as significant indicators of adoption. This is specifically significant with regard to Rogers' components of the innovation type:

- complexity - the degree to which an innovation is perceived as difficult to understand and use;

- compatibility - the degree to which an innovation is perceived as being consistent with existing values, past experiences and needs of potential adopters;
- relative advantage - the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 1983).

Figure 2.1: Technology Acceptance Model



(Adjusted from Harris et al., 2001)

In the TAM (see Figure 2.1) the behavioural intention (BI) of the users to actually utilize the technology is determined by their attitude toward using the innovation. However, the attitude has first been influenced by two specific beliefs: the user's perception of how easy it is to use the technology, or "perceived ease of use" (PEOU), and the perception of how useful the technology will actually be in the user's job, or "perceived usefulness" (PU). Attitude determines the user's behavioural intention, which results in their actual utilization (Davis, 1989). Davis (1989) is of the view that even if an application would

objectively improve performance, users are unlikely to use it if they don't perceive it as useful.

2.3.2.1 Perceived Usefulness (PU)

Perceived usefulness refers to the user's belief that the utilization of a particular system would increase performance. This follows from the definition of the word useful: "capable of being used advantageously" (Davis, 1989). According to Swanson (1987) items such as "useful", "relevant", "important" and "valuable", parallel perceived usefulness (cited in Davis, 1989). It has been argued that perceived usefulness is a relative term and relates to the term "relative advantage" as outlined by Rogers (1983), i.e. the extent to which benefits are seen as outweighing costs (Moore and Benbasat, 1991; Roth et al., 2003; Rogers, 1983). Rogers (1983) argues that it's irrelevant whether the innovation has a great deal of "objective" advantage. What matters is whether the individual perceives the innovation as beneficial. In this research the perceived usefulness refers to the belief of lecturers that the use of WebCT would increase job performance and will add educational value to their work. If too much time and effort were invested into WebCT, compared to the expected net benefit, the innovation would not be perceived as useful.

Various studies have concluded that users' beliefs regarding perceived usefulness and perceived ease of use had a direct effect on utilization (Davis, 1989; Harris, 2000; Igbaria, Shayo and Guthrie, 1999). Individual characteristics (e.g. computer anxiety),

organizational characteristics (e.g. resistance to change), and system characteristics (e.g software user-friendliness) were all found to have influenced perceived usefulness and behavioural intentions (Harris, 2000; Moore and Benbasat, 1991; Igbaria et al., 1999). “A system that does not help people perform their job is not likely to be received favourably in spite of careful implementation” (Robey 1979 cited in Davis, 1989:320).

Based on two studies conducted by Davis (1989), perceived usefulness had a significantly greater correlation with usage behaviour than did perceived ease of use As noted by Davis (1989:319), “PEOU may actually be a causal antecedent to PU, as opposed to a parallel, direct determinant of system usage”. Users are driven to adopt an application primarily because of the functions it performs for them, and then secondarily for how easy or hard it is to get them to perform those functions. Although difficulty of use can inhibit adoption of an otherwise useful innovation, no amount of ease of use can compensate for a system that does not perform a useful function (Davis, 1989).

The term PU is widely used in the literature, however the term “user satisfaction” is also commonly accepted for overall user effectiveness (Mirani and King 1994 cited in Harris, 2000). A satisfied end-user will most likely adopt an innovation, however, a user first needs to be exposed (e.g. through training) to the innovation, establish whether it is satisfactory and then make a decision to adopt or reject the technology. User satisfaction is formulated as a response to a recently implemented system, while positive user attitudes refer to a state which can begin from the project’s inception and continue throughout the systems working life (Coombs, Doherty and Loan-Clarke, 2001). User

satisfaction can include the perceived educational value, effectiveness, productivity and whether the innovation saves time.

The main reason why institutions turn to technology is to improve productivity, to increase revenue and to be competitive (Jawahar, 2002). However, if end users do not acquire the skills and utilise those skills to improve their job performance, the benefits of technology adoption are unlikely. This is based on the assumption that satisfied users are more likely to out-perform dissatisfied users. However, according to Mirani and King (1994), the provision of support structures and other situational and dispositional factors are critical to user effectiveness (cited in Harris, 2000).

User satisfaction has been used as the most accepted measure in the literature to date for measuring end user success (Jawahar, 2002; Harris, 2000; Igbaria et al., 1999) and Web-user satisfaction (Doll and Torkzadeh 1994 cited in Harris, 2000). The fundamental perspective of user satisfaction is that it is derived from a users' judgment of certain features of an innovation (Harris, 2000) and the potential benefits in using the innovation. One reason many educators resist educational technologies is because they are sceptical of its educational value (Cronje and Murdoch, 2001). Cronje and Murdoch (2001) studied the experiences of lecturers using WebCT at the Rand Afrikaans University and found that "lack of knowledge about technology" and "too little knowledge of WebCT to use it optimally" were major concerns of lecturers that impacted on their perceived usefulness of WebCT.

2.3.2.2 Perceived Ease of Use (PEOU)

PEOU refers to the degree to which a user or potential user believes that the utilization of a particular system would be without much effort. This follows from the definition of "ease": freedom from difficulty or great effort (Davis, 1989). The assumption is that if an application is perceived to be easier to use than another, it is more likely to be accepted by users. It relates to "the complexity" identified by Rogers (1983) as the degree to which an innovation is perceived as relatively difficult to understand and use (Davis, 1989; Moore and Benbasat, 2001). Evidence showed that skill played a major role in technology acceptance (Igbaria et al., 1999). The importance of PEOU is supported by Bandura's (1982) extensive research on self-efficacy, defined as "judgments of how well one can execute courses of action required to deal with prospective situations" (cited in Davis, 1989). Davis (1989) is of the view that, according to this definition, self-efficacy is similar to PEOU, while Chau (2001) views self-efficacy as an antecedent factor to PEOU and PU.

Diverse studies have explored the two key factors in the Technology Acceptance Model; i.e. PEOU and PU and how it is influenced by situational and dispositional factors (Davis, 1989; Harris, 2001; Moore and Benbasat, 2001; Igbaria et al., 1999). An interesting finding from these studies is the presence of a significant, positive relationship between PEOU and PU. The user's intention to use an innovation depends on his/her perception of its usefulness, rather than on how easy it is to use. As noted in the previous

section on PU, no amount of ease of use will compensate for low usefulness (Chau, 2001; Davis, 1989).

Swanson (1982) is of the view that perceived software user-friendliness is sometimes referred to as PEOU. If a software package is perceived as "easy", "unburdensome", "convenient", "controllable", it could be perceived as user-friendly. In this way, user-friendliness corresponds to perceived ease of use (cited in Davis, 1989:322). Software packages that are perceived as rigid and inflexible, confusing, difficult to understand and to use, are likely to constrain and hinder user acceptance and actual use (Jawahar, 2002). Lack of user-friendliness appears to have the most detrimental effect on actual use and may also negatively influence attitude towards working with computers (Jawahar, 2002), such as (1) computer anxiety, consisting of anxiety toward or fear of computers or learning to use computers; (2) computer confidence, which refers to confidence in the ability to learn about or use computers; and (3) computer liking, which relates to the enjoyment or liking of using computers (Orr, 2001).

In this research the perceived ease of WebCT usage, refers to the degree that learning, understanding and using WebCT is free of difficulty or great effort for lecturers. It is widely accepted that situational (environmental) and individual dispositional factors affect the behaviour of individuals (Jawahar, 2002). In this study the effects of both situational and dispositional factors on PEOU and PU are investigated. The following section will explain the two types of factors, i.e. situational and dispositional, and how certain antecedent variables impact on PEOU and PU.

2.3.2.3 Utilisation

Utilisation refers to the actual or perceived use of the innovation. Davis (1989) conducted two studies where the participants were asked to self-report their degree of usage of two different technologies. Both studies found that the usage was significantly correlated with both PEOU and PU. The relative strength of the usefulness-usage relationship compared to the ease of use-usage relationship was one of the most significant findings of the two studies. Davis (1989) argues that the prominence of PU is self-explanatory because users are driven to adopt a technology primarily because of its functionality and secondarily for how easy or hard it is to get the system to perform those functions. As argued in the previous sections, users are often willing to cope with a degree of difficulty of use, if the system provides the requisite value and usefulness.

Harris, et al. (2001) found that the utilisation of WWW-technology is predicted by the users' attitude to the use of the technology. By using the TAM, they found that utilisation gives insight into the various antecedent factors of PEOU and PU, such as demographic variables (e.g. age, gender, occupation), apprehension towards the technology, time constraint, and organisational support. The utilisation of a technology is also influenced whether it is voluntary or not. Future studies are needed to examine actual utilisation as opposed to self-report utilisation as respondents may have memory error or may have answered the self-report question with social desire bias (Steiner and Norman 1995 cited in Harris, et al., 2001).

2.4 SITUATIONAL AND DISPOSITIONAL FACTORS

Situational constraints are those factors that are largely beyond the control of individual users, e.g. lack of resources, faulty equipment and time constraints that restrict the range of the individual's acceptance of the innovation (Jawahar, 2002). Dispositional factors refer to preconceived attitudes and established behaviour characteristics of the user that may influence user acceptance and performance, e.g. the influence of attitudes, aptitudes, gender, learning styles, experience, cognitive styles, and education (Chau, 2001; Jawahar and Elango, 2001; Jawahar, 2002; Harris et al., 2001; Harris, 2000). Chau (2001) suggests that based on the results of prior studies on TAM, it seems reasonable to put PEOU and PU, the two key variables in TAM, as the mediating variables between the antecedents (i.e. situational and dispositional variables) and the attitude (A) variable (see Figure 2.1). Chau (2001) also argues that although TAM has been empirically tested quite considerably, very few studies have looked into the "external variables" of the model. Jawahar (2002) is of the view that prior research has relied almost exclusively on dispositional variables compared to situational variables to investigate the influence on user acceptance and performance.

In a meta-analysis conducted by Saeed et al. (2003) of technology acceptance studies published between 1995 and 2002, the dominant theoretical model used was TAM. Users or consumers of web-technologies were the main subjects in these studies and the search was done in 11 mainstream Information Systems journals and a total of 42 published papers were identified for inclusion. Personal traits such as personal innovativeness, web

skills, Internet computer self-efficacy and affinity with a computer were amongst those that have consistently been found significant variables across studies (Saeed et al., 2003). Not all of the variables are universally applicable and various studies use different terminology to describe almost the same thing. The authors of these studies have described a variety of innovation practices and characteristics that may influence innovation use (Saeed et al., 2003; Klein and Sorra, 1996). Constructs or variables may be identified in the literature as a subset of one or more implementation policies and practices (Klein and Sorra, 1996), e.g. under "organisational climate" the issue of training, support, rewards and voluntariness could reside. For the purposes of this research, the variables will be grouped into situational and dispositional factors that influence the adoption of a new technology. The subsets of the situational and dispositional variables as illustrated in Figure 2.2 are by no means exhaustive.

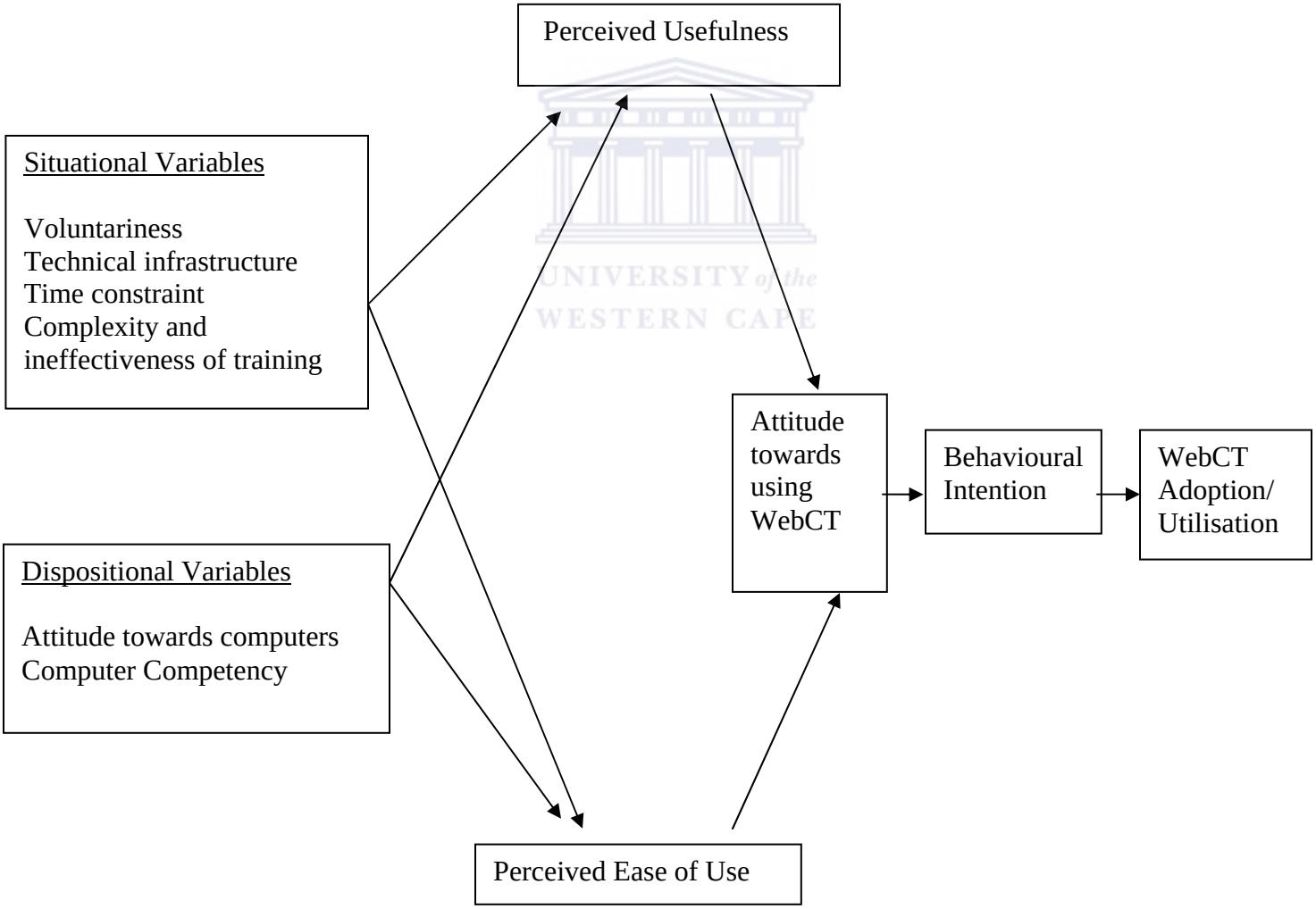
Technical infrastructure and voluntariness were amongst others, identified as situational factors in the literature and will be discussed in the following section. However, the latter two variables will not be included for hypothesis testing because WebCT does not present a technical infrastructure problem at CPUT and the absence of any pressure from management in the faculty to adopt WebCT was found to be ubiquitous.

Situational and dispositional factors consist of variables that may have an important impact on the adoption of WebCT. In this study three situational variables (i.e. Voluntariness, Time constraint and the Complexity and ineffectiveness of training) and

two dispositional variables (i.e. Computer competency and Attitude towards computers) are explored.

Using the TAM model as the basic premise for this research, the model will be expanded to TAM Macro Model (see Figure 2.2)

Figure 2.2: TAM Macro Model for WebCT adoption
(Adapted from Davis1989: Harris et al., 2001)



2.4.1 SITUATIONAL FACTORS

2.4.1.1 Voluntariness

Voluntariness of use is defined as "the degree to which use of the innovation is perceived as being voluntary, or of free will". Consideration must be given to whether individuals are free to implement personal adoption or rejection decisions (Moore and Benbasat, 1991). E.g. use of a particular innovation within organizations may either be encouraged or discouraged by top management of the institution. Moore and Benbasat (1991) are of the view that the issue of voluntariness was significant in technology adoption and developed a scale to measure the voluntary adoption factor.

Voluntariness could also be influenced by management advocacy of the new technology or in terms of organisational support, e.g. use of the innovation is monitored and praised by managers and supervisors, providing incentives for use and disincentives for innovation avoidance (Moore and Benbasat, 1991; Turner and Turner, 2002; Harris et al., 2001; Klein and Sorra, 1996). Pather and Erwin (2000) suggest that incentives could be provided, e.g. reduced teaching loads to small teams of lecturers to engage in experimental Web-based course development. Ely (1999) is of the view that the inconsistency in interpretation of the terms "rewards" and "incentives" led to less importance of this factor in most studies, even though the condition was present in all of the studies. An incentive serves as a stimulus to move an individual to action; a reward is something given for performance (Ely, 1999).

In a study conducted at Rand Afrikaans University, some lecturers felt that using WebCT is not considered for promotion purposes, or offering the lecturers free time or a lap top (Cronje and Murdoch, 2001). Compensation for time spent on designing and managing online courses is often not considered. Often lecturers resist a new innovation because it is viewed as extra work and therefore it will take extra effort to implement. Because of these inhibitors, some lecturers will not voluntarily adopt WebCT.

2.4.1.2 Technical infrastructure

Organisational conditions in which a technology is being implemented, such as the technical infractructure - e.g. network, software tools, servers, etc - should ensure that the innovation is reliable and available (Pather and Erwin, 2001; Klein and Sorra, 1996; Ely, 1999; Cronje and Murdoch, 2001). Harris (2000) agrees that user's ability to utilise technologies has evolved alongside the growth in the capability of hardware and software technologies and that organisational adjustments have occurred in response to these changes. The availability and accessibility of technologies is one of the components of a reliable and efficient infrastructure for Web-technologies. With Web-based course delivery users can develop a negative attitude towards excessive Web page download time and unappealing formatting and graphics of Web-pages. Spotts (1999) argue that the availability of equipment and facilities might motivate the user to implement the technology.

2.4.1.3 Time constraint

The time allocated to learn and become proficient in new skills is likely to affect how well lecturers learn and use their skills. Time constraint is a real factor because of its potential to inhibit acceptance and therefore performance (Jawahar, 2002; Harris et al., 2001). Time for training, availability of time to experiment and flexible time to search for information, were identified as influencing factors in adoption strategies for web technology (Sherry, Billig, Tavalin and Gibson, 2000; Saeed et al., 2003; Klein and Sorra, 1996; Ely, 1999; Cronje and Murdoch, 2001). After training the user needs opportunities to practice. However with time poverty, the retention of the training material is often impossible (Pentland 1989 cited in Jawahar, 2002; Pather and Erwin, 2000). Time is needed to acquire the knowledge and skills, to use, adapt, integrate and reflect upon what users are doing. This will mean "good" time, "company" time, "paid" time arranged for by the organisation where the innovation will be implemented (Ely, 1999). Lecturers often voice their concern that because of time constraints they are unable to fit technology into their busy schedules and to "cover the curriculum" if it involves so much action research on technology in the classroom (Broere et al., 2001). The variable "time" has been identified as important for future studies of acceptance of information technologies (Harris et al., 2001).

2.4.1.4 Complexity and ineffectiveness of training

Training is an essential contributor to the productive use of computer systems and technology (Jawahar, 2002). Training literature reports consensus by trainers that the more complex, ineffective and confusing the training, the more unlikely the user will implement the skill (Jawahar, 2002; Tannenbaum and Yukl, 1992; Klein and Sorra, 1996; Ely, 1999). According to Broere et al., (2003), the Software and Information Industry Association found that those educators with 10 hours or more training to acquire technology related skills, significantly outperformed those with five or fewer training hours. "Professional development and decisions about how technology should be used may matter more than how often technology is used" (Broere et al., 2003). Through effective training, the lecturers can become more knowledgeable about the technology in addition to the acquisition of the skills to operate and understand the technology (Cronje and Murdoch, 2001).

The question arises whether training should be customized or whether it should be "one size fits all"(Aggarwal, 2003; Rosenberg, 2001). Aggarwal (2003) argues that matching the lecturer's skills to the training required is not a generic process. To foster life-long learning and acquisition of skills, specifically related to technology, employees should "seek" training. Training may require matching employee's current skills to skills required to use the innovation. The important question is how characteristics of training, e.g. complexity of training, affect user acceptance; the perception of complexity is likely

to affect acceptance and performance directly, and indirectly, through its effect on motivation and attitude towards the innovation (Jawahar, 2002).

In order to create and foster a climate for technology acceptance, training should not only be uncomplicated and readily available, but additional assistance in the innovation use should be available following the training (Klein and Sorra, 1996).

2.4.2 DISPOSITIONAL FACTORS

2.4.2.1 Attitude towards computers

A variety of terms are used in the literature to describe the negative attitudes associated with computers – computer anxiety, cyberphobia, computerphobia, technophobia, etc. Jay (1981), one of the first to use the term "computerphobia", provided the following definition: "(a) resistance to talking about computers or even thinking about computers, (b) fear or anxiety toward computers, and (c) hostile or aggressive thoughts about computers" (cited in Orr, Allen and Poindexter, 2001:191).

Individuals who hold favourable attitudes towards working with computers are more likely to practice and learn computer skills, and achieve higher levels of performance on tasks that require the use of those computer skills, than those who hold less favourable attitudes (Jawahar, 2002). The general attitude towards computers affects the behavioural intention of using a technology (Chau, 2001; Sherry et al., 2000; Roth et al.,

2003; Orr et al., 2002). Personal factors that novice users of technology usually express include the fear of looking foolish in front of their colleagues or the students (Mulqueen 2001 cited in Broere, et al., 2003).

Jawahar and Elango (2001) argue that there is a distinction between attitudes towards computers in general and attitudes towards working with computers in the workplace. Attitude towards working with computers is much more specific and relates to tasks that require the use of computer skills than the more general attitudes toward computers. In their study, attitude towards working with computers was positively related to end user acceptance and performance (Jawahar and Elango, 2001). In contrast, Chau's (2001) findings suggest the importance of developing a positive attitude towards computers in general if an innovation is to be perceived as useful and easy to use.

2.4.2.2 Computer competency

Computer competency is the ability, skill and knowledge to operate the computer. Rosenberg (2004) argues that the implementation of knowledge and skills to operate the computer varies. In order for e-learning to become a significant part of learning, it is important that competence – the learning, practice and demonstration of performance – is matched to the "right delivery vehicle" (Rosenberg, 2001), which refers to the Web-based application. Although Rosenberg (2001) refers to general competence in e-learning, computer competence forms an integral part of it. Despite the widespread influx of technology in all segments of our society, the literature often reports high levels of

anxiety and negative attitudes about using computers (Orr et al., 2001). The literature refers to "computer anxiety" as an indicator for lack of computer literacy (Jawahar and Elango, 2001). Computer competence can manifest itself through personal innovativeness, playfulness and computer skill, which are determinants of use, achieving effects through ease of use and usefulness (Saeed et al., 2003:5). Pather and Erwin (2000) found that academic staff often does not have the necessary skills to implement Web-based courses and that the support staff needed for assistance was not available in the departments in which most of the respondents taught.

The competency required to learn and operate WebCT is basic computer literacy and navigation skills with a standard web browser. Lecturers with little knowledge about Web technology can easily customize their courses (WebCT, 2004: [Online]). However, even though some lecturers rated themselves as fairly computer competent, they are hesitant to familiarize themselves with Web technology, such as WebCT in their courses. This could be ascribed to a variety of antecedent factors as outlined above.

2.5 RESEARCH MODEL FOR THIS PROJECT

Whilst voluntariness is an important factor for WebCT adoption, the absence of any pressure from management in the faculty to adopt the technology was found to be ubiquitous. WebCT infrastructure and hardware for course delivery in the faculty are efficient and available. The two variables "technical infrastructure" and "voluntariness" will therefore not be included for hypothesis testing.

Based on the review of the literature and in preliminary interviews with e-learning facilitators, the following variables (see the Research Model in Figure 2.3) and associated hypotheses were identified as most important in the adoption of WebCT in the faculty of Management.

- **Complexity and ineffectiveness of training** – Exposure to training is an important factor in technology acceptance. If the user, after having gone for training, perceives the training as complex and ineffective, it is likely to negatively affect adoption of the technology (Jawahar, 2002; Tannenbaum and Yukl, 1992). By the same token, if training is perceived as easy and without much effort, then the user is more likely to adopt the technology.

  H1: The complexity and ineffectiveness of training of WebCT impact negatively on the perceived ease of use of WebCT

  H2: The complexity and ineffectiveness of training of WebCT impact negatively on the perceived usefulness WebCT

- **Time Constraint** – a lack of time to learn and understand WebCT, may result in the perception that WebCT is difficult to use. Lecturers are likely to become frustrated or disinterested and not adopt WebCT when they are expected to learn and become proficient in a short amount of time. Because of time poverty, users cannot practice to find out whether WebCT is useful or not (Saeed et al., 2003; Cronje and Murdoch, 2001). The basic premise is that the more time spent on WebCT, the easier it will be and therefore the more useful it will be perceived. The incentive could be to ultimately adopt a timesaving technology, however initially time is needed to learn the technology.

H3: Time constraint impacts negatively on perceived ease of use of WebCT

H4: Time constraint impacts negatively on the perceived usefulness of WebCT

- **Attitude towards computers** - if users have a positive attitude towards computers they will be more inclined to find WebCT easy to use. At the same time, if they have a positive attitude towards computers and the perception that WebCT is ease to use, they are more likely to find WebCT useful (Jawahar, 2002; Chau, 2001). On the other hand, if a person has a negative attitude towards computers, a new technology is likely to be perceived as difficult to use and not useful.

H5: Participants attitude towards computers impacts positively on the perceived ease of use of WebCT

H6: Participants attitude towards computers impacts positively on the perceived usefulness of WebCT

- **Computer Competency** - The basic premise is that the more computer competent (that is perceived competence: the competency was not measured in this research) the user perceives him/herself, the more likely the user will find it easy to use WebCT (Jawahar and Elango, 2001; Saeed et al., 2003). At the same time, the higher the perceived computer competence, the more likely the user will find WebCT useful.

H7: Self-rated computer competency positively impacts on the perceived ease of use of WebCT

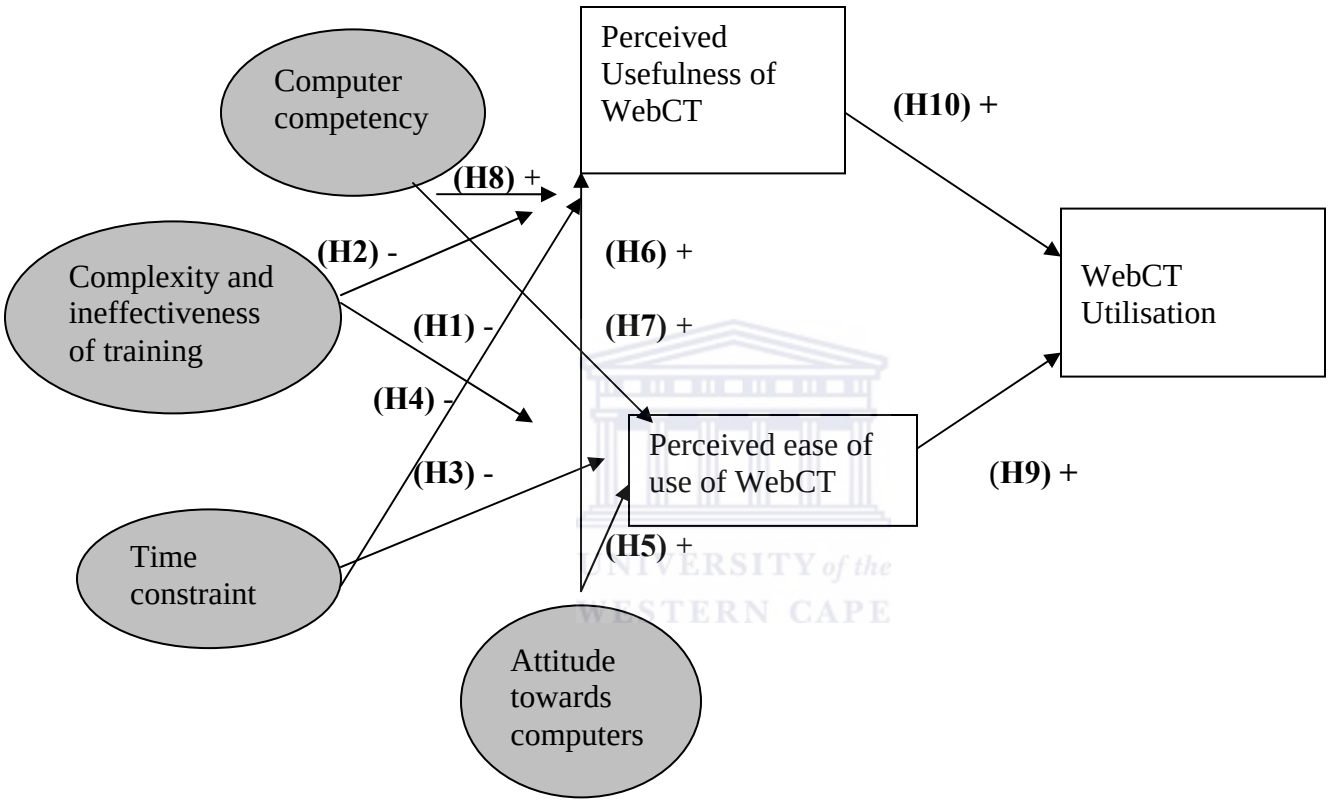
H8: Self-rated computer competency positively impacts on the perceived usefulness of WebCT

- **WebCT utilisation:** Usage is directly related to how users perceive a technology. If a technology is perceived as easy to use and useful, it is highly likely that it will be implemented. Davis (1989) argues that usage is significantly correlated with both PEOU and PU. The following assumptions were therefore made:

  H9: Perceived ease of use impacts positively on WebCT utilisation

  H10: Perceived usefulness impacts positively on WebCT utilisation

Figure 2.3: RESEARCH MODEL (Adjusted from the TAM Model)



2.6 SUMMARY

Adoption of innovation theories is well documented in the literature. The "diffusion of innovation" theory (Rogers, 1983; 1995) and the "Technology Acceptance Model" (Davis, 1989) are amongst those theories that have been most tested in diverse studies and are relevant to the context of this research. They were therefore selected as the basis of the analytical framework for this research. The literature review on technology adoption thus provides a useful foundation for the formulation of a research model on the adoption of WebCT as a technological innovation in the context of an HEI. Chapter Three describes the research design and methodology applied.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter explains the research strategy and research methods adopted, the qualitative and quantitative approaches that were implemented, selection of participants and the data collection techniques that were used. The review of the literature and a description of the verification of the research are the concluding remarks of this chapter.

The fieldwork for this research was conducted at CPUT between August and October 2005 to examine the factors facilitating and inhibiting the adoption of WebCT in the Management Faculty across the three campuses, i.e. Cape Town, Granger Bay and Mowbray. The Bellville campus was not included because it has only recently been merged into CPUT and consequently pursued a different adoption path. The pilot study was conducted in the first week of August 2005.

3.2 HYPOTHESIS AND CONCEPTUALIZATION

A preliminary interview with the Director of e-learning, conducted prior to the finalisation of the research topic, found that the rate of adoption of the WebCT innovation was far below target (Smit, 2004). No significant improvement in the

adoption rate has been achieved subsequently (Smit, 2005). As a result, the rate of adoption of WebCT is considerably below target in the faculty, as the majority of staff has not adopted WebCT. In order to better understand this problem, the research question was formulated as follows:

> In the Faculty of Management at the Cape Town, Mowbray and Granger Bay campuses, how do selected factors, including perceived ease of use (PEOU) and perceived usefulness (PU), relate to the non-adoption of WebCT by academics?

3.3 RESEARCH STRATEGY

The case study approach, eg. using the Faculty of Management at CPUT as a site, as a research strategy allows the researcher to conduct the research in a particular "real-life" environment and to address the "how" and "why" question (Yin, 2002). Yin (2002) is of the view that the unique strength of case study approach is its ability to deal with a full variety of evidence. In this research, both semi-structured interviews and a questionnaire were used.

3.4 RESEARCH METHODOLOGY

The method of inquiry in this research included both qualitative methods, i.e. semi-structured interviews, and quantitative methods, i.e. a survey questionnaire. The two

approaches were triangulated to establish how the qualitative and quantitative methods might complement one another.

3.4.1 QUALITATIVE APPROACH

This research has adopted a qualitative approach for the following reasons:

- The purpose of the research, to understand the perceptions of WebCT amongst academic staff members within the faculty, can be addressed by focusing "on understanding a given social setting, not necessarily making predictions about the setting"(Denzin and Lincoln. 1994:212).
- The interviews conducted allowed the researcher to interact on a personal level, listen attentively and at the same time record "personal, face-to-face and immediate" responses (Denzin and Lincoln, 1994:212).
- It is a design that "looks at the relationships within a system or culture" (Denzin and Lincoln, 1994:212). Common themes and categories that were captured from the interview transcripts were understood and interpreted given the social context within the faculty where the researcher works and has developed an in-depth understanding.
- The interview questions were open-ended and explored research opportunities that led the researcher into unforeseen areas of discovery within the lives of the people being investigated (Holliday, 2002), particularly as CPUT is undergoing organisational realignment at present and the merger has affected people at different levels. For example, one interviewee identified issues of job insecurity

brought about by the merger as one of the inhibiting factors for his disinterest in WebCT. Sub-categories were formulated from data that are significant, but do not fall directly within the identified hypothesis. This could be explored for future research.

- In this research oral responses were tape-recorded and carefully analysed, providing rich description from which the researcher could extract meaning and the data collected could be placed into categories.

3.4.1.1 Semi-Structured Interviews

The researcher wanted to understand by means of in-depth discussions "what" the real problem was, "how" it manifests, but more importantly "why" there is a problem in the non-adoption of WebCT (Saunders, Lewis and Thornhill, 1997). In this research semi-structured interviews proved advantageous because:

- It was necessary to establish causal relationships between variables and the opportunity to probe answers (Saunders et al., 1997);
- "the interviewer … has more control over who answers the questions", in comparison to a questionnaire which may be passed from one person to another"(Healy, 1991 cited in Saunders et al., 1997);
- Open-ended questions were asked which allowed participants to speak freely without interruption.

3.4.2 A QUANTITATIVE APPROACH

The findings from the semi-structured interviews could be validated by triangulation with the findings of a survey questionnaire. The quantitative approach was followed because:

- "different lenses or perspectives result from the use of different methods …. to gain a more holistic view of the setting"(Denzin and Lincoln, 1994:224). The questionnaire provided additional relevant information;
- the triangulation of the evidence could improve the internal validity, i.e. the extent to which a researcher's observations and measurements are true descriptions of a particular reality (Denzin and Lincoln, 1994).

3.4.2.1 Questionnaire

A pilot questionnaire was designed with constructs identified in the literature-based research model and items were adapted from proven scales in the literature. The intention of the pilot questionnaire was to test the questions on a small group of people. After the pilot phase, the questions were revised where appropriate and the final questionnaire was sent out to the remaining population of full-time academic members in the faculty. The response rate was 75%. The details of the variables in the questionnaire are tabulated in Chapter Four.

The survey method was followed because:

- it allows for "the systematic gathering of information from respondents for the purposes of understanding and/or predicting some aspects of the behaviour of the population of interest"(Tull and Hawkins 1987 cited in Baker, 2003);
- "such a survey could be designed as part of a case research and produce quantitative data as part of the case research evidence (Yin, 2002);
- "structured questionnaires are the principal means used for collecting data by means of a survey of a designated population or sample in which the researcher is interested" (Baker, 2003).

3.5. DATA COLLECTION TECHNIQUES USED IN THIS RESEARCH

The total number of academic staff members in the faculty at the time of the study was 73 spread across 11 departments. Four participants, each from a different department, were chosen to fill out a pilot version of the questionnaire. These participants were chosen specifically because of the contribution that they could make to the research; two have been for training more than once, but do not use WebCT; one uses WebCT, but has never been for training; one does not use WebCT, but is highly computer competent and has written his own software programme that he integrates in his courses.

After the pilot research, the semi-structured interviews were conducted. Stratified sampling was applied, the departments were the subgroups and the participants were randomly selected from each subgroup (Cooper and Schindler, 1998). Each person's

name in a specific department was placed into a box and drawn. Every person had an equal chance of being selected (Cooper and Schindler, 1998). No distinction was made between users and non-users of WebCT in the faculty. The basis for the inclusion of users was that WebCT is a fairly new technology at the institution and that users would also have certain experiences, opinions and ideas around WebCT adoption, which could be significant for this research. For the two largest departments, i.e. Academic Development and the Hotel School; two people per department were selected and for the rest of the departments one person each. Thirteen interviews in total were conducted.

3.6 ANALYSIS OF QUALITATIVE DATA

In this research the code-and-retrieve technique was used to explore categories and relationships, structured in a table to assist with the analysis. "The code-and-retrieve process consists of labeling passages of data according to what they are about or other content of interest in them (coding or indexing), then providing a way of collecting identically labelled passages (retrieving) (Denzin and Lincoln, 1994). This code-and-retrieve method is the most widely recommended technique for management of rich and complex records. In this way, content is defined by coding the text (Denzin and Lincoln, 1994).

During the pilot research, face-to-face interviews were conducted with four participants from different departments. This pilot phase allowed the researcher to test three open-ended questions.

- Do you think it is easy to use WebCT, and why?

- Do you think WebCT is useful, and why?
- Are there other factors that you think inhibit or facilitate the use of WebCT?

The questions were broad, allowing the participants to "tell their stories". The intention of the third question was to obtain more "targeted information" and to "fill the gaps" of the first two questions (Denzin and Lincoln, 1994). The analysis for the third question was done by grouping responses that could be associated with PEOU and PU respectively. The responses that refer to "what makes it difficult to use WebCT" and "what encourages you to use WebCT" are tabulated (see Chapter 4).

Where necessary the researcher probed to allow participants to elaborate on certain aspects, without leading the questions. The interviews were recorded on a digital recorder, then transferred to a personal computer and converted into sound files for storage and retrieval so that the actual recordings are available for verification (Denzin and Lincoln, 1994). Transcriptions were done from the sound files into text files in MSWord. These MSWord files were imported into an Excel Spreadsheet where the data was coded into categories. The different segments of text were coded by selecting the constructs as identified in the hypothesis. "Forming lists of possible categories of points lies at the heart of describing your data. They will form the building blocks for your description"(Riley, 1990). Sub-categories were formulated from data that are significant, but that do not fall directly within the identified hypothesis (see Chapter 4).

3.7 ANALYSIS OF QUANTITATIVE DATA

The planning of a questionnaire was of utmost importance. The formulations of the questions, the response categories, and the order in which the questions are asked are important in the determination of the results (Webb, 2000). A pilot questionnaire was designed with the intention of testing it on a small group of people to see whether they understand the questions, and whether the researcher would get the desired response.

The pilot questionnaire was sent out to the four participants that were selected for the interviews. In hindsight four other respondents could have been chosen who would not have been familiar with the research questions. Two respondents felt that there should be a difference between "undecided", "don't know" and "not applicable". The pilot questionnaire only made provision for a scale "undecided".

Following the pilot questionnaire, a few changes had to be made. The "undecided" option was changed to "don't know", but was listed as an independent option. The 7-point scale was changed to a 6-point scale (see Chapter Four). Questions that were considered as ambiguous by the pilot participants were either discarded or re-worded. Re-designing the questionnaire was important as the researcher had to ensure that the questions were clearly structured to obtain meaningful responses. The questions were predominantly opinion based and the researcher had to pay attention to the structure and sequence of the questions. In most cases, constructs were measured with proven scales from the literature and adjusted within the context of this research. The questionnaire was

divided into 7 sections; the first six sections were pre-coded so that the data could be converted into an Excel Spreadsheet and then imported into SPSS for analysis.

The last section (Section G) of the questionnaire was open-ended: the respondents had to complete in writing. This information was processed in Excel, coded and categorised, using the "code-and-retrieve" technique described earlier for the semi-structured interviews. The thirteen interviewees also completed the questionnaire because they could make a contribution to the data that may have been omitted in interview.

3.8 VERIFICATION OF THE RESEARCH

3.8.1 QUALITATIVE APPROACH

The following aspects were important to establish trustworthiness in the collection and the analysis of the data. The interviews were planned and participants were aware of the purpose of the research.

3.8.1.1 Reliabilitity of findings

Yin (2002) refers to a reliable study when the operations of the study, such as the collection procedures, can be repeated with the same results. To achieve this, the researcher focused on:

- critical self-reflection to exclude potential personal biases

- systematic and accurate recording of the responses of interviewees
- establishing trust and rapport with the interviewees
- cross-checking the researcher's interpretation and conclusion with interviewees

Documentation (e.g. recordings and transcription of interviews) to support the analysis and the interpretation of the findings are available. This analysis could be triangulated with the survey questionnaire applied in this research.

3.8.1.2 Credibility of the findings

Qualitative research is only as good as the investigator (Denzin and Lincoln, 1994). The risk of analyzing open-ended questions is the subjectivity of the researcher. The responses are varied, and are sometimes difficult to categorise and analyse. The researcher ensured that the data was repeatedly interpreted, then tabulated for classification and pattern recognition (see Appendix B), as well as "crisscrossed" reflection (Denzin and Lincoln, 1994).

3.8.1.3 Dependability of the findings

Dependability refers to the extent to which the researcher's categories and explanations correlate with what is true (Denzin and Lincoln, 1994). The accurate account of the data and the consistency of the findings relates to dependability. In this research the researcher used the code-and-retrieve technique to ensure dependability and the findings are a reflection of the responses of the participants.

3.8.1.4 Transferability of the findings

A common concern about case studies is that they provide little basis for scientific generalization. The question is frequently asked, "How can you generalize from a case? (Yin, 2002). In qualitative research transferability relates to the extent to which other researchers can replicate the research or apply the findings to similar contexts. The findings of this research could be transferable to other faculties at the same institution and may be transferable to other HEIs that use WebCT or other e-learning platforms.

3.8.1.5 Triangulating the findings

Triangulation refers to consciously "double check findings, using multiple sources and modes of evidence" (Denzin and Lincoln, 1994). In this research semi-structured interviews and structured questionnaires were used, allowing the weakness in the one to be compensated for by the strength of the other.

3.8.1.6 Ethical aspects of the research

Ethics become important when we interact with other people, other beings and the environment (Mouton, 2001). The participants' rights to privacy, anonymity, confidentiality and voluntary participation were respected. Participants were asked for permission to have the interviews recorded and their participation in the survey was voluntary.

3.8.1.7 Bias

Probing questions were used in some cases to "explore responses which are of significance to the research topic". These were worded like open questions but ensured a particular focus or direction (Saunders et al., 1997). This technique was intended for exploration and not intended to lead the questions.

3.8.1.8 Leading questions

When questioning is conducted appropriately, the scope to interviewer bias is limited and the reliability of the information obtained increased (Saunders et al., 1997). The researcher was aware of implications of bias and consciously monitored herself. The researcher allowed the participants to speak freely while demonstrating attentive listening skills. There is always a risk that although probing is not intended to lead, it may not be consistently applied.

3.8.2 QUANTITATIVE APPROACH

3.8.2.1 Validity

Validity refers to the degree to which the questions measure what it is supposed to be measuring (Webb, 2000). Some of the questions asked in the questionnaire were

extracted and adapted from proven scales from the literature. Standardised tests were applied to test the relationship between identified variables.

3.8.2.2 Reliability

Reliability refers to the consistency in reaching the same result when measurement is made over and over again (Webb, 2000). The pilot research and the redesign of some questions increased the reliability of the questionnaire. The researcher was conscious not to imply potential bias with regard to the formulation of the questions.

3.9 SUMMARY

This chapter explained the research strategy and design chosen. It elaborated on the justification for the qualitative and quantitative approaches, the selection of the participants as well as the data collection techniques applied. The role of the literature review was discussed and an explanation of the trustworthiness of the research was detailed. The next chapter focuses on the research findings.

CHAPTER FOUR

RESEARCH FINDINGS AND ANALYSIS

4.1 INTRODUCTION

As previously discussed the findings were generated from a structured questionnaire and semi-structured interviews. The questionnaire data was captured in an Excel spreadsheet and then imported into a statistical software programme, called SPSS, for analysis. The interviews were transcribed, mapped into tables and analysed according to the qualitative method described in Chapter 3. This chapter firstly describes the operationalisation of the variables and then the results of the questionnaire and interviews. This will be followed by sections that discuss the alternative analysis that was conducted, and finally the hypothesis testing.

4.2 OPERATIONALISATION OF VARIABLES

4.2.1 MEASURES AS LIKERT SCALES

The measures Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), Computer competency (Self-rated), Attitude towards computers, Complexity and ineffectiveness of training and Time constraint are attitude scales of the Likert type (see Table 4.1). A score ranging from 6 to 1 was allocated to each respondents answer. The subjects were asked to

respond with levels of agreement coded as extremely likely (6), quite likely (5), slightly likely (4), slightly unlikely (3), quite unlikely (2), extremely unlikely (1) or completely agree (6), mostly agree (5), slightly agree (4), slightly disagree (3), mostly disagree (2), completely disagree (1).

An even number of categories (six) was used to force respondents to pick a side i.e. to avoid a neutral (the so-called neutral response set) without assuming that 3.5 is a midpoint value. The "don't know" option was included for selected items following the testing of the pilot questionnaire when it became apparent that provision had to be made for a "Don't know" option because of many respondents lack of knowledge of WebCT.

The coding and interpretation of the 'don't know' responses posed a number of challenges because of the large number of respondents who selected this option. Likert originally used a seven-point scale and a value of 4 was given for non-responses (Kerlinger, 1973). In the present study a number of respondents chose "don't know" and, following Kerlinger, a score of 3.5 was allocated to these responses. A zero cannot be allocated to these since this will imply that the response was even more extreme than "Extremely unlikely", which, in turn may slant or biases the total score to a very unrealistic value.

In order to establish whether the 3.5 value biased the findings a separate analysis was conducted excluding the respondent's answering "don't know". These results are reported separately and analysed in Section 4.5 below.

Table 4.1: Description of Variables

VARIABLE	DESCRIPTION	MEAN	STD. DEV	CRON-BACH α
Age	(1=21-25yrs;2=26-30yrs3=31-40yrs;4=41-50yrs;5=>50yrs)	41 yrs	6	
WebCT Training	(1=Yes;0=No)	0.25	0.44	
WebCT competence	(4=Advanced;3=Good;2=Average;1=Low;0=None)	0.82	0.97	
Complexity and ineffectiveness of training	Adapted from Jawahar (2002). A 4-item 6-point scale measuring the complexity and ineffectiveness of training - Training complex; Instructor explained clearly (reverse coded); More productive after training (reverse coded); Confused when on my own. 6=Completely agree; 5=mostly agree; 4=slightly agree; 3=slightly disagree; 2=mostly disagree; 1=Completely disagree. "Don't know" was given independently with a mid-point score of 3.5. No of respondents=51	3.40	0.52	.60
	Alternative analysis: "don't know" excluded. No of respondents=17	3.47	0.87	.78
Time constraint	Adapted from Jawahar (002). A 4-item 6-point scale measuring time constraint - Lack of time; More time enhance effectiveness; Too much time to learn and understand; Current workload. 6=Completely agree; 5=mostly agree; 4=slightly agree; 3=slightly disagree; 2=mostly disagree; 1=Completely disagree. No of respondents=51	4.16	1.01	.64
Attitude towards compuers	Adapted from Chau, (2001). A 5-item 6-point scale measuring attitudes towards computers - Bright era; Educational purposes; Unlimited possibilities; Get things done easier; Exploring new things. 6=Completely agree; 5=mostly agree; 4=slightly agree; 3=slightly disagree; 2=mostly disagree; 1=Completely disagree. No of respondents=52	5.47	0.65	.85
Computer Competency	Adapted from Davis (1989). A 5-item 6-point scale measuring the perceived competence. The "don't know" option was excluded for the first two items - Working with computers is easy; Computers enhance effectiveness; Learn to operate easy; Current computer competency find WebCT useful; Current computer competency allow to learn and operate WebCT. 6=Completely agree; 5=mostly agree; 4=slightly agree; 3=slightly disagree; 2=mostly disagree; 1=Completely disagree. "Don't know" option was given independently for the last two items and was given a mid-point score of 3.5. No of respondents=52	4.68	0.83	.87
	Alternative analysis: "don't know" excluded. No of respondents=44	4.79	0.76	.87
Perceived ease of Use	Adapted from Davis, (1989) and Chau, (2001). A 4-item 6-point scale measuring the perceived ease of use of WebCT - Get WebCT to do what I want it to do; Clear and understandable; Flexible to work with; Easy to become skilful. The same points were used as for PU. No of respondents=52	3.67	0.76	.82
	Alternative analysis: "don't know" excluded. No of respondents = 30	3.89	0.86	.82
Perceived usefulness	Adapted from Davis, (1989) and Chau, (2001). A 4-item 6-point scale measuring the perceived usefulness of WebCT – Improve job performance, Easier to do job, Increase productivity; Useful in job. 6=Extremely likely;5=quite likely;4=slightly likely;3=slightly unlikely;2=quite unlikely;1=extremely unlikely. "Don't know" was given a mid-point score of 3.5. No of respondents=51	4.22	0.97	.92
	Alternative analysis: "don't know" excluded. No of respondents = 37	4.51	1.02	.89
WebCT utilisation	One item adapted from Davis (1989). How often do you use WebCT in your current course/offering? 1=Monthly; 2=Once a week; 3=Several times a week;4=Once a day;5=Several times a day; 0=None	0.71	1.23	

4.2.2 DISPOSITIONAL AND SITUATIONAL FACTORS

Descriptions of all variables are summarised in Table 4.1, illustrating all the items that measured the constructs in the research model. The survey questions used to operationalize the constructs were adapted from prior related studies (see Appendix A). The information technology applications in previous studies varied from Microsoft Word, Excel, Power Point, Access, E-mail to WWW applications and the theoretical framework was based on the original or adapted TAM.

Davis (1989) reported that the instrument he developed from the TAM has shown to be reliable through psychometric testing. PU and PEOU are standard instruments used in the literature and their psychometric properties will not be verified in this study, nor, for purpose of simplicity, will an attempt be made to construct a Thurstone scale of "equal appearing intervals". The objective was, in the words of Kerlinger (1973:496), "to place the respondent somewhere in the agreement continuum" so that relationships can be suggested and a model verified.

4.2.3 OPEN-ENDED SURVEY AND INTERVIEW QUESTIONS

The last section of the questionnaire was qualitatively analyzed and responses referred to:

- "what makes it difficult to use WebCT";
- "what encourages you to use WebCT";
- Additional comments.

With the interviews, variables PEOU and PU were investigated further:

- PEOU: Question 1 ("Do you think it is easy to use WebCT, and why);
- PU: Question 2: ("Do you think WebCT is useful, and why");

Responses to Question 3: "Are there other factors that you think inhibit or facilitate the use of WebCT?", were grouped based on whether they could be associated with PEOU and PU.

4.3 RESULTS OF QUESTIONNAIRE AND INTERVIEWS

4.3.1 SELECTION OF RESPONDENTS

Stratified random sampling was applied for the selection of the interviewees for the semi-structured interviews. For the two largest departments, i.e. Academic Development and the Hotel School, two people per department were selected and for the rest of the departments one person each. Thirteen interviews in total were conducted. Of the 13 people interviewed:

- 10 were non-users of which 6 had attended at least one training session and 4 never went for any training
- 2 were users: 1 had attended training
- 1 was an ex-user of WebCT and attended a training session.

Both users and non-users were included in the study because WebCT is a relatively new innovation and users are currently not using it extensively. The users too have certain inhibiting experiences that proved to be useful for this research. The ex-user indicated that her current time constraints make it difficult to create an "exciting and quality online environment" for the students. She also said that maintaining and monitoring a course online is time consuming and that she needed a refresher course to find an easier way to do the monitoring.

The questionnaire was distributed to all 69 lecturers in the faculty and 52 responded. The four pilot participants were excluded, because they were already familiar with the questions. The 13 interviewees also completed the questionnaire because the population is already relatively small, and they could make a contribution to the data that had not explicitly been asked for (e.g. demographic information) in the interview.

The response rate was 75%, which is good rate considering the work pressure people are generally under in the last term of the year. In Section A of the questionnaire, the participants were requested to provide demographic information (e.g. sex, age), their department, lecturing course and information regarding WebCT training and experience.

4.3.2 DEMOGRAPHICS

The details of the variables in the questionnaire, the description, mean, standard deviation and Cronbach's Alpha, are tabulated in Table 4.1. The level for significance was chosen

at p <0.05. The Cronbach Alpha has been reported to get some idea of reliability although it is acknowledged that this is merely a measure of internal consistency (Kerlinger, 1973:496). A Cronbach Alpha greater than 0.9 suggests that the measure has an extremely high internal consistency. The implication is that the items making up the measure are too uniform.

The responses per department that are tabulated in Appendix C reveal a few differences between departments. The first column indicates the different departments, followed by the population for male and female per department, followed by the responses received of males and females in each department, then the percentage responses per department and the last column the percentage of the total responses received. Fifty two percent of respondents were female. Out of the total population of females, 77,8 % responded, compared to 72,7% males from the male population. The majority of the respondents fall within the 31 – 40 age group (see Table 4.2). This could be advantageous since they could be expected to be more receptive to the recommendations that will result from this study than the "older" age group.

Table 4.2: Age categories of respondents

Age	% Respondents
26 – 30 yrs	19.2
31 – 40 yrs	40.4
41 – 50 yrs	19.2
> 50 yrs	21.2
Total	100.0

In Section A of the survey lecturers had to indicate whether they have been for WebCT training, and when the training was undertaken. Twenty five percent of lecturers have

gone for WebCT training but only 15,4% indicated ***when*** the training was undertaken (see Table 4.3). This is of particular importance since the longer the delay of the implementation of the new skill and knowledge acquired during training, the more difficult it becomes to use the technology.

Table 4.3: WebCT training per year

Year training was undertaken	**% Respondents**
2001	1.9
2002	1.9
2003	5.8
2004	5.8
Total	15.4

The perceived competence (self-rated) (see Table 4.4) with regard to WebCT is generally low: "no competence" rated by 46,2%, which could be related to the low attendance at training sessions as only 25% of lecturers have gone for WebCT training as pointed out above. This is significant because the e-learning department regularly advertises WebCT training sessions throughout the institution. Training is the starting point for most users to acquire the foundation knowledge and skills to learn and understand WebCT. Twenty-six respondents (50%) regard themselves highly competent with the World Wide Web (see Table 4.4). This is contrary to WebCT competence, as 77% of respondents regard themselves as having no or low competence levels with WebCT, which could imply that there are significant competency barriers to adoption. The majority of the respondents rated their competence with regard to other technology as average or advanced (see Table 4.4), compared to low or no competence with regard to WebCT.

Table 4.4: Perceived competence with WebCT and other technology

			Competence: Other technology			
	Competence: WebCT		% Respondents			
	Responses Received	% Respondents	Word Processor	Spread Sheet	Email	Web
No competence	24	46.2				
Low	16	30.8	3.8	28.8	1.9	19
Average	8	15.4	38.5	34.6	36.5	30.8
Good	2	3.8				
Advanced	1	1.9	57.7	36.5	61.5	50
Total	51	98.1	100	100	100	100

4.3.3 SITUATIONAL FACTORS

4.3.3.1 Complexity and ineffectiveness of training

The mean for Complexity and ineffectiveness of training of 3.40 reflects a high level of responses towards "don't know" (see Table 4.1). When these are excluded (i.e. alternative analysis), the mean of 3.41 indicates high incidence towards "slightly agree", signifying the perception that the manner in which WebCT training is conducted as complex and ineffective. There is a significant difference between the standard deviations of the two analyses, indicating that the degree of variability in the responses of the alternative analysis is higher. The Cronbach Alpha of 0.78 for the alternative analysis suggests a greater degree of internal consistency amongst the range of possible answers for each item.

The overall findings of the interview responses (see Appendix D) suggest that training was necessary in order to learn and find WebCT useful. The need for training and

support in the faculty was repeatedly commented on in the interviews and in the additional comments section of the questionnaire. Nine of the thirteen interviewees are of the view that training and assistance makes it easier to learn and understand WebCT, while seven viewed training as important to establish the usefulness of WebCT. Typical comments were "*I do think that one needs to go for training if you want to use the program to its full potential*" and when asked if WebCT is easy, a reply was "*No, I don't think so, it will be easy if you are properly trained*". Interviewees refer to the frustration when trying to make sense of WebCT outside the training environment, with comments such as, "*I did sometimes feel frustrated, …and I couldn't quite remember, I didn't quite get there, it doesn't quite work in a way that … sometimes it just becomes confusing*".

The responses in the interviews regarding the complexity of training varied from "*To me at this stage it was very complicated. Unfortunately there wasn't a follow up session. So I had that one session, it was a once off session and when I left the venue, that is where I left WebCT*", to "*I found the training quite thorough, but I did find it very fast. There was very little time to actually internalize what was being said*". The complexity of training and the lack of assistance are important inhibitors to PEOU and PU of WebCT.

4.3.3.2 Time constraint

The survey questions for Time constraint reflect a mean of 4.16, indicating a high incidence of "slightly agree". The don't know option was not given for this construct.

Although Time constraints were not significantly expressed in the interviews (see Appendix C) with regard to PEOU of WebCT, eight interviewees indicated that Time constraints have inhibited them from establishing the value of WebCT and perceived it as an added responsibility. Comments such as "*You can't even finish your own research in your own time, and I think most people like me, think that WebCT is an added burden*" and "*We are so over flooded with classes and other activities, that I simply do not have the time*" were expressed.

In contrast, one interviewee felt that time is no excuse for not using WebCT: "*There is always enough time, you must make time. No one can say that you do not have time. You must just plan for it*".

4.3.4 DISPOSITIONAL FACTORS

4.3.4.1 Attitude towards computers

The responses to Attitude towards computers in general, are not that varied (Standard Deviation = 0.65). The mean of 5.47 signifies that the respondents "mostly agree" that computers play an important part in today's society (see Table 4.1).

Six interviewees mentioned that a positive attitude towards computers and technology in general influence the decision whether a technology is going to be used or not. They view computers as an integral part in their lives, with comments such as "*I think the*

technology is vital so if you don't you are just going to be left behind" and "*I have a very positive approach to computers, because they can do so much*".

Several comments were made regarding the lecturer's mindset towards WebCT specifically, including "*So there is a fear factor involved when you hear the name*" and "*That's one of my excuses; we shy away from computers and IT technology, I think the longer we wait, I wait to put in a definite effort, to use WebCT, I am going to be pushed behind*".

4.3.4.2 Computer competency

There are not significant differences between the means and standard deviations of both analyses. The mean of 4.68 compared to 4.79 of the alternative analysis indicates that respondent's feel that they mostly agree that their perceived level of Computer competency is adequate to learn and operate WebCT (see Table 4.1).

The majority of the interviewees were of the opinion that Computer competency is necessary to learn and understand WebCT (see Appendix D). Typical remarks were: *"…if you look at something like WebCT, you should be past that computer literacy stage, you should have more than a basic knowledge of computers, you should be reasonably competent …*" and "*Yes, definitely, if a person has a very good grasp of computers and especially can work on the Internet, then I think it would be beneficial for them*". However, the lack of computer competency in some cases was expressed with statements

like "…. *I am not an avid computer user. I'm just a user in terms of the basics. In terms of e-mail, typing and printing documents and that is about it*".

There was also caution expressed by interviewees that computer competency should not be assumed amongst academics, "*I feel as an academic we need to move with the times, with the students and it is a shame that as academics we know so little in comparison with the students*". Another interviewee said: "*One thing is that some lecturers are not even computer competent. And I think that that is a problem. They usually need someone to help them. And they see this as an addition to their workload*".

Lack of computer competency can also lead to negative attitudes towards computers in general as one lecturer expressed: "*Yes I do see it as an inhibitor, and as something that can cause people to have mental blocks …*"

4.3.5 PERCEIVED EASE OF USE (PEOU)

The mean of 3.67 suggests that the majority of responses lie between "don't know" and "slightly likely" (see Table 4.1). Where "don't know" is excluded, the mean is 3.89, suggesting responses more towards "Slightly Likely". There is no significant difference between the standard deviations of both analyses, which means that the responses are not significantly varied. The Cronbach's Alpha score 0.91 for PU, suggest an excessively high level of internal consistency of the questions for this section (see Table 4.1).

The survey responses for PEOU are summarised in Table 4.5. About one-third of the respondents answered “Don’t know” to all four questions, which appears to be markedly high. This clearly suggests that there is a lack of knowledge about WebCT. The second highest frequency is “slightly likely”, which could mean that with more knowledge about WebCT, it may become easy to use. An alternative analysis was conducted to establish the impact if the “don’t know” option was excluded. The results of the alternative analysis are discussed in detail in Section 4.6, but there appear to be no significant differences in the means of the four questions if the “don’t knows” are excluded.

The results from the interviews, which are summarised in Appendix D, indicate that the majority of the participants interviewed perceived WebCT as easy to use, but are of the view that training is important to help them learn and understand WebCT. Two of the three participants that experienced WebCT as difficult to use went for training more than once. The other participant who is of the view that WebCT is difficult, did not go for training, but has been “trained” by a colleague. The interviewees that “did not have enough knowledge” at the time of the interviews, were of the view that WebCT were not marketed properly to get them interested, “*I have never been intrigued enough to go and find out about it*”.

Table 4.5: Perceived ease of use and Perceived Usefulness of WebCT

	PERCEIVED EASE OF USE (PEOU)				PERCEIVED USEFULNESS (PU)			
	When I first learnt about WebCT I knew it I could get WebCT to do what I want it to do	When I first learnt about WebCT I knew that I would find it clear and understandable	I am likely to find WebCT flexible to work with	It is easy for me to become skilful at using WebCT	When I first learnt about WebCT I knew it would improve my job performance	When I first learnt about WebCT I knew it would make it easier to do my job	When I first learnt about WebCT I knew it would increase my productivity	When I first learnt about WebCt I knew it would be useful in my job
Don't know (3.5)	17	17	18	15	14	15	14	14
Extremely unlikely (1)	3	2	1	1	2	1	2	1
Quite unlikely (2)	7	4	3	2	1	2		1
Slightly unlikely (3)	5	9	3	8	2	3	6	2
Slightly likely (4)	14	11	14	14	12	8	10	7
Quite likely (5)	6	9	12	10	15	18	16	20
Extremely likely (6)				2	6	5	4	7
Total	52	52	51	52	52	52	52	52
Mean	3.42	3.56	3.82	3.83	4.19	4.20	4.09	4.38
Std. Dev.	1.01	.95	.88	.94	1.12	1.08	1.07	1.07
Mean – excluding 'Don't know' replies	3.37	3.60	4.00	3.97	4.45	4.49	4.32	4.71
Std. Dev.	1.24	1.17	1.06	1.09	1.22	1.17	1.19	1.09

4.3.6 PERCEIVED USEFULNESS (PU)

In both analyses the average responses for perceived usefulness lie between "Slightly likely" and "Quite Likely". The standard deviation of 1.02 suggests a greater spread of the responses where "don't know" is excluded (see Table 4.1). When the items are analysed individually, the means for all 4 questions are markedly higher when "don't know" is excluded, suggesting responses more towards "Quite Likely" (see Table 4.5).

As with PEOU, the "Don't know" scores for PU appear high, which implies the lack of knowledge about WebCT and possibly the skepticism about the educational value of WebCT. The second highest frequency for PU is "quite likely", which could mean that respondents are more disposed to explore the usefulness of WebCT, compared to the responses for the second most responses, "slightly likely" of PEOU (see Table 4.5).

The majority of the interviewees (11) were of the view that WebCT would be useful to them (see Appendix C). A typical comment from the group was "*If I want to embark on WebCT and really use it, and I think it is a valuable tool, I need to be able to spend time on just getting to know the tool"*. The single interviewee, who thought that WebCT is not useful, is of the view that WebCT is an expensive system and that the manner in which it is currently used has very little educational value. "*It is an expensive system that maintains an entire department and according to me, it may have changed, but a year or two ago, the system was only used for students to access notes. And it should actually be a training/educational system"*.

Another interviewee, who did not have enough knowledge to answer the question, admitted a "mental block" when it comes to computers and prefers the traditional face-to-face learning environment, "*… I still have the block that I need to get over, I suppose …… I come from the old school; I think it is a mind shift. … I could rather think of it as a preference rather than seeing WebCT as a negative"*.

In some cases the interviewees acknowledged the usefulness of WebCT, but did not think that it can be applied in their subjects. *"It is useful, but I don't think my subject will benefit from it"*.

4.3.7 WEBCT UTILISATION

The majority of the respondents are currently not using WebCT (see Table 4.6). This is important because the focus of this study is to establish which factors are inhibiting or facilitating the non-adoption of WebCT. The research question in this study is: How do selected factors; including perceived ease of use (PEOU) and perceived usefulness (PU), relate to the non-adoption of WebCT by lecturers.

Item A12 of the questionnaire established the frequency of using WebCT: "How often do you use WebCT in your current course/offering?" The responses received are reflected in Table 4.6, indicating that 65% are non-users. In the open-ended interviews a higher proportion (77%) are currently non-users.

Table 4.6: WebCT utilization rates

	% Respondents
None (0)	65.4
Monthly (1)	15.4
Once a week (2)	9.6
Several times a week (3)	3.8
Once a day (4)	3.8
Several times a day (5)	1.9
Total	100

4.3.8 OPEN-ENDED SURVEY QUESTIONS

Findings from the open-ended questions in the survey generally support the structured survey questions (see Appendix E), except Time constraints that appeared to be a major inhibiting factor to lecturers to use WebCT. Responses to the factors that would encourage participants to utilise WebCT, varied from benefits that will be gained in terms of assessments, saving time, support and benefits for the students.

When asked which factors inhibit participants to use WebCT, 28 out of 52 participants stated Time constraint and workload as the major inhibitor for not using WebCT. Lack of knowledge and Computer competency were also identified as inhibitors
(18 participants) as was Training and support (14 participants).

Twenty one of the 52 participants, completed the additional comments section, of which four indicated that they have little or no knowledge about WebCT; five are of the view that WebCT is not useful for either their subject content or because they prefer the traditional face-to face teaching; seven could see the benefits, but need training and

support; three are of the view that support should come from either e-learning or top management; two think that they need time for training (see Appendix E).

4.4 HYPOTHESIS TESTING

The hypotheses were tested using bivariate correlation analysis. Spearman's normal rho was applied because since the number of staff is larger than thirty, a z-conversion was done. Spearman's rho was also applied considering extreme scores, to allow for the cases where the responses for "don't know" appeared markedly high. This was ascribed to the fact that a significant number of staff members do not use WebCT, have limited knowledge about it and have never been for training, even though the e-learning department advertises WebCT training on a regular basis. Table 4.7 summarizes the hypotheses supported and rejected based on the questionnaire and interviews.

Table 4.7: Hypothesis Testing

HYPOTHESES					
	All responses included		**Don't know excluded**		**Open-ended interviews**
PERCEIVED EASE OF USE	**Spearman correlation**	**Hypothesis**	**Spearman correlation**	**Hypothesis**	**Hypothesis**
H1: Complexity and ineffectivenss of training negatively impacts on PEOU	-.302(**)	Supported	-.589(**)	Supported	Supported
H3: Time constraints impact negatively on PEOU	-.163	Not supported	-.223	Not supported	Not supported
H5: Attitude towards computers impacts positively on PEOU	.363(***)	Strongly supported	.317(**)	Supported	Supported
H7: Computer Competency positively impacts on PEOU	.635(***)	Strongly supported	.772(***)	Strongly supported	Supported
PERCEIVED USEFULNESS					
H2: Complexity and ineffectiveness of training negatively impacts on PU	-.145	Not supported	-.550(**)	Supported	Supported
H4: Time constraints impacts negatively on PU	.119	Not supported	-.013	Not supported	Supported
H6: Attitude towards computers positively impacts on PU	.224(*)	Moderately supported	.183	Not supported	Supported
H8: Computer Competency positively impacts on PU	.207(*)	Moderately supported	.183	Not supported	Not Supported
WEBCT UTILISATION					
H9: PEOU impacts positively on WebCT utilisation	.253(**)	Supported	.034	Not supported	Supported
H10: PU impacts positively on WebCT utilisation	.519(***)	Strongly supported	.366(**)	Supported	Supported

* Correlation is significant at the 0.1 level (1-tailed).
** Correlation is significant at the 0.05 level (1-tailed).
***Correlation is significant at the 0.01 level (1-tailed).

Correlations between PEOU, PU and hypothesized situational and dispositional antecedents are shown in Table 4.5. The results from the survey and open-ended interviews found that:

H1: Complexity and ineffectiveness of training impact negatively on PEOU of WebCT

H2: Complexity and ineffectiveness of training impact negatively on PU of WebCT

Results from the questionnaire found that Complexity and ineffectiveness of training impact negatively on PEOU. The correlation to PEOU is significant, but not to PU: implying that if training is perceived as complex and inefficient, lecturers are more likely to find WebCT difficult to use. When "don't know" is excluded in the survey questions,

Complexity and ineffectiveness of training has a statistically significant impact on PEOU and PU. This is supported by the open-ended interviews.

H3: Time constraint impacts negatively on PEOU of WebCT

H4: Time constraint impacts negatively on PU of WebCT

Findings from the questionnaire indicate there is no statistically significant relationship between Time constraint, PEOU and PU, even though there is a negative relationship between PEOU and Time constraint. This implies that time poverty does not have a significant impact on lecturers' perception that WebCT is easy and useful. In contrast, the findings from the open-ended interviews indicate that Time constraint has a significant impact on PU of WebCT, suggesting that with the availability of time participants are more likely to find WebCT useful.

H5: Attitude towards computers impacts positively on PEOU of WebCT

H6: Attitude towards computers impacts positively on PU of WebCT

There is a statistically strong correlation between attitudes towards computers and PEOU and a moderately significant correlation to PU according to the survey findings. This implies that lecturers that have a positive attitude towards computers in general are more inclined to find WebCT easy and useful. These hypotheses are supported in the interviews.

H7: Computer competency impacts positively on PEOU of WebCT

H8: Computer competency impact positively on PU of WebCT

Computer competency is statistically strongly correlated to PEOU, but moderately correlated to PU, meaning that lecturers who rated themselves as computer competent are more likely find WebCT easy and useful. In the open-ended interviews computer competency was also found to impact more on PEOU than PU.

H9: PEOU impacts positively on WebCT utilization

H10: PU impacts positively on WebCT utilization.

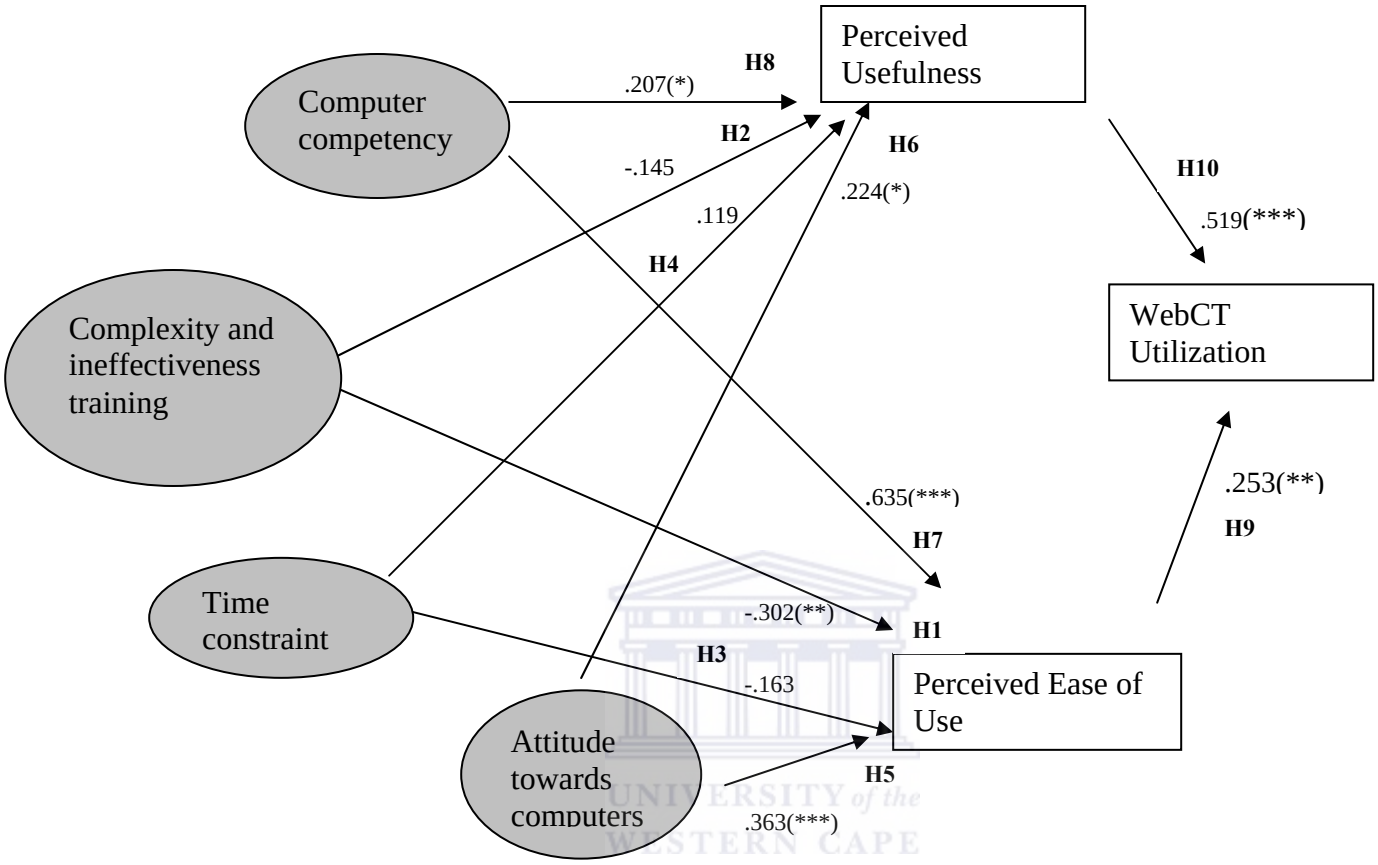
There is a statistically significant positive relationship between both PEOU and PU and WebCT utilization (see Table 4.7), which implies that lecturers are more inclined to utilize WebCT if it is perceived to be easy and useful. The strong correlation between PU and WebCT utilization is corroborated in the literature (Davis, 1989; Harris, 2000; Igbaria, Shayo and Guthrie, 1999) suggesting that users are driven to adopt an application primarily because it is useful to them, then secondarily for how easy or hard it is to use it. If lecturers find WebCT of educational

value, they are more inclined to adopt the technology, even if there is a degree of difficulty to learn and understand it.

4.4.1 RESEARCH MODEL

The research model illustrates the impact of the situational factors, i.e, Time constraint and complexity and ineffectiveness of training and the dispositional factors, i.e. Attitude towards computers and Computer competency on the PEOU and PU variables. The correlation between of PEOU, PU and WebCT utilisation is also indicated.

Figure 4.1: Adjusted TAM Macro Model (Bivariate correlations)



* Correlation is significant at the 0.1 level (1-tailed).
** Correlation is significant at the 0.05 level (1-tailed).
*** Correlation is significant at the 0.01 level (1-tailed).

From the hypotheses tested, the antecedent factors for PEOU and PU are those factors that indicate a statistically significant level of significance:

- Complexity and ineffectiveness of training impacts negatively on PEOU
- Attitude towards computers impacts positively on PEOU and PU
- Computer competency impacts positively on PEOU and PU.

4.5 AN ALTERNATIVE ANALYSIS

In the previous analysis the "don't know" option was scored as a mid-point value and the justification for this value was given under section 4.2. "Don't know", is different to "undecided". With "undecided" people do have an opinion but cannot make a selection. With "don't know", people do not have an opinion because lack of knowledge and ignorance. Given this, the high number of "don't know" answers could distort the interpretation of the data if coded as a mid-point. For this reason, an alternative analysis is provided where "don't know" answers have been excluded. The results do not suggest significant differences between the means and the standard deviations of the previous analysis (don't know option included) and the alternative analysis (see Table 4.1). However, the hypotheses tested in this analysis, indicate that contrary to the previous analysis, H2 is supported and H9 is not supported (see Table 4.7). A discussion for these inconsistencies follows:

H2: It is hypothesised that the complexity and ineffectiveness of WebCT training will negatively influence PU of WebCT. In this analysis because of the exclusion of the "don't know" option, only 17 responded, compared to 51 (see Table 4.1). This implies that these respondents have

knowledge about WebCT and its usefulness. In the analysis where all the responses were taken into account, the hypothesis was not supported. A plausible explanation for this could be that because of the high incidence of "don't know", lecturers do not have enough knowledge to establish whether WebCT training is a precondition to the perceived value and benefits of using the technology. Lecturers could also have the perception that a certain level of computer competency and familiarity with Web-based technology must first be acquired before the usefulness of WebCT can be established.

H9: The hypothesis that PEOU of WebCT will positively impact on WebCT utilisation, is not supported in the alternative analysis. This implies that ease of use does not presuppose utilisation. About 57% (30 out of 52) of the respondents indicated "don't know" on the PEOU questions (see Table 4.1). The explanation for this could be that lecturers that are familiar with WebCT will use it more for its usefulness and benefit and not because it is easy to use. The literature supports this notion that users are often willing to cope with a degree of difficulty of use, if the system provides the requisite value and usefulness.

This analysis proves to be a better reflection of the relationships between the identified variables, PU and PEOU, because it reflects the lecturers that have knowledge of WebCT even though they may not be active users. On the other hand, ignorance and lack of knowledge about WebCT is a reality in the faculty and cannot be ignored, as the intention of this study was to establish the reasons for the ignorance and how it impacts on non-adoption of WebCT.

Because of the relative small size of the population of the alternative analysis, the findings cannot be generalized.

4.6 DISCUSSION

The following section will be structured according to the research model (see Fig 4.1). Firstly, the findings of the situational and dispositional factors and their impact on PEOU and PU will be discussed. Following this, PEOU and PU will be discussed and the influence of the selected antecedents will be elaborated on. Finally, a discussion of WebCT adoption and the influence of PEOU and PU will follow.

4.6.1 SITUATIONAL FACTORS

Complexity and ineffectiveness of training: The majority of the respondents have limited knowledge of WebCT training, as indicated by the high level of "don't know" responses. Both analyses identified Complexity and ineffectiveness of training as a significant inhibiting factor to PEOU. However, contrary to the alternative analysis, the "all responses" analysis did not find complexity and ineffectiveness of training as an inhibitor to PU.

Participants felt that in order to perceive WebCT as easy, training should be uncomplicated, hence the significant correlation to PEOU. This is consistent with studies conducted by Jawahar (2002) and Tannenbaum and Yukl (1992). Jawahar (2002) found that perceived complexity of training to use database software was negatively related to technology utilisation. Even though

Jawahar's (2002) study did not test PEOU and PU, but focused directly on utilisation, it does have significance because this study ultimately focused on WebCT utilisation through the perceived characteristics. In the interviews, four of the lecturers that went on training did not find the training too difficult, but expressed the view that computer competency is necessary in order to endure the training.

There is no statistically significant correlation between the Complexity and ineffectiveness of training and PU of WebCT. Even though the majority of the lecturers do not have enough knowledge about WebCT, many lecturers are skeptical of its educational value. One can argue that the educational value, or lack thereof, can only be discovered once one knows more about and have used WebCT and are then able to make an informed assessment of its value. User-satisfaction may then only occur once the user is exposed to the technology, e.g. through training and implementation. Even in the initial adoption stage, users can form an opinion about WebCT's usefulness, and then decide whether or not it is satisfactory for their educational purpose.

The need for regular training and assistance was expressed in the interviews. One can argue that if training is less complex then the need for assistance will be less, however with such a limited number of lecturers that have been for training, this variable does not accurately reflect whether training is really complex or not. The implication of this finding for the faculty is to focus on the effectiveness of training provided, e.g. whether follow-up assistance is given, availability of e-learning department, etc.

Time constraint: The responses to the survey had an overall mean of 4.15, which implies that overall lecturers "slightly agree" that lack of time inhibits their ability learn and find WebCT useful. The correlation between Time constraint and PEOU and PU respectively were not statistically significant. This finding is consistent with findings by Harris et al (2001) whose study found insignificant correlations between "time" and WWW utilisation, through the perceived characteristics of TAM. However, in the same study "time" was identified as a significant predictor of e-mail utilisation. Harris et al., argue that because their study was limited to health care professionals working in a rural area, other factors such as lack of physical and financial resources could have contributed to the lack of time.

With regard to Time constraint and PEOU, a possible explanation for the statistically insignificant correlation would be that because lecturers have limited knowledge of WebCT, they could therefore not make an informed decision whether WebCT is easy or difficult to use. The perceived difficulty of WebCT may not be because of time poverty, but because of ignorance regarding WebCT, i.e. the perception that web-based or Internet applications are complicated.

As established, Time constraints do not have a statistically significant correlation to PU of WebCT. The same argument can be used as with PEOU discussed above: lack of information about WebCT's usefulness and not because of time poverty. This could imply that if lecturers are aware of the usefulness of WebCT, they will more likely make time available to use it. Paradoxically, the majority of the interviewees were of the view that time is needed to find out whether WebCT is educationally functional, irrespective whether it is easy to use. This notion is

supported by Davis (1989), suggesting that no amount of ease will compensate for usefulness. There is a greater emphasis on usefulness in terms of investing time on something new.

Time-constraint proved to be important in the open-ended sections of the survey. A significant number of participants stated time constraint and workload as the major inhibitors for not using WebCT. This finding concurs with the responses in the interviews with regard to PU. A number of participants in the interviews thought that time is needed to manage courses online in such a way that it is of optimal educational value. Many are of the view that it is top management's responsibility to set aside time for lecturers to learn and operate WebCT. Users need time to practice WebCT, in this way they may be able to establish whether WebCT is useful or not.

The "Time constraint" factor could be explored for future research once there is a considerable increase in WebCT awareness and knowledge in the faculty. The availability of time can lead to positive impacts on the other inhibitors; i.e. availability for training, a heightened positive attitude towards technology and confidence in using WebCT, which could lead to more time to practice and even an increase in computer competency.

4.6.2 DISPOSTIONAL FACTORS

Attitude Towards computers: In response to the survey questions regarding lecturer's attitude towards computers in general, most respondents agree that computers are important in today's society.

The result of the survey shows that Attitude towards computers is statistically strongly correlated to PEOU. This implies that if lecturers have a positive attitude towards computers in general, they are more likely to find WebCT easy to use. This finding corroborates Chau's (2001) study that computer attitude positively affects both PU and PEOU, and Jawahar's (2001:321) finding that "attitude towards working with computers" was positively related to technology utilisation. This raises the question why WebCT adoption is so low in the faculty, if a positive attitude presupposes ease of use. This could imply that there is largely a negative attitude towards computers in general that influence the propensity of lecturers to use WebCT. In the interviews lecturers implied their disinterest in computers in general and trepidation in using WebCT specifically. The need for a "mind shift" was frequently expressed.

The results show that Attitude towards computers has a moderately significant correlation with PU. A plausible explanation for this could be the observation of apathy with regard to lecturer's perceptions of new innovations; hence lecturer's limited knowledge and skepticim about the value of WebCT. The absence of a "buzz" in the faculty with regard to WebCT, could be the cause of the general disinterest. It is highly likely that if an individual does not like computers in general, a negative attitude may already prevent him/her from considering the usefulness of WebCT. This relates to the "no responses" in the interviews, which could be ascribed to their indifference to WebCT. They may view computers as a "necessary burden" in the workplace, but may feel embarrassed to verbalise it. In the interviews a few lecturers admitted that they have a mindset problem and "fear" computers and training sessions. Even though the "no responses" in the interviews were still relatively high, a number of lecturers feel positive about technology and how useful WebCT can potentially be to them.

Computer Competency: It was hypothesized that Computer competency positively impacts on PEOU and PU of WebCT. The majority of the respondents in both analyses indicate that they mostly agree that their perceived level of computer competency is adequate to learn and operate WebCT. The results of the survey found that there is a statistically strongly significant correlation between computer competency and PEOU but a moderately significant correlation to PU.

The implication of this result, i.e. Computer competency is statistically strongly correlated to PEOU, is that the highly competent individuals who believe that they can learn and effectively use computer technology to enhance their performance are likely to outperform those with low levels of computer competency. The basic premise was that the higher the computer competence (that is perceived competence: the competency was not measured) the more likely the user would find it easy to use WebCT. This is consistent with findings by Igbaria and Iivari (cited in Chau, 2001), who found a statistically significant relationship between computer self-efficacy (the belief that one has the capability to perform a particular behaviour or skill) and PEOU and an insignificant effect on PU. In contrast, Chau, (2001) found a statistically insignificant relationship between computer self-efficacy and PEOU. A plausible explanation for the inconsistencies is the differences between the technology applications; the competencies required in various studies conducted are also varied. E.g. Chau's (2001) study was on a particular software package (Microsoft Word) while Igbaria and Iivari's study (1995), focus was on microcomputer use in general. In addition, the formulation of the survey questions is adapted to suit the particular technology under study.

Computer competency was found to have a moderately significant correlation to PU of WebCT. In contrast, the majority of the participants in the interviews did not mention computer competency as an important factor for PU. The possible explanation for this could be that lecturers first need to find the WebCT easy to use and then after acquiring the skill, the value and functionalities of WebCT could be explored. Computer competency can also be influenced by the attitude that lecturers have towards computers, e.g. computer anxiety would inhibit the likelihood to find WebCT useful. The implication of the relationship of Computer competency and PU of WebCT in the faculty is of importance, because in the context of TAM, PU reflects a person's belief or expectations about outcomes. In the same way, computer competency refers to an individual's perceptions of his or her ability to use computers in the accomplishment of a task. Compared to the other variables of PU, someone with a high level of computer competency is more likely to establish whether the technology is useful or not.

4.6.3 PERCEIVED EASE OF USE (PEOU)

Diverse studies have established that Complexity and ineffectiveness of training (Cronje and Murdoch, 2001; Jawahar, 2002), Attitude towards computers and Computer competency (Chau, 2001;Jawahar and Elango, 2001) are antecedents to PEOU.

Similarly, the majority of the responses in the survey suggest limited knowledge about the PEOU of WebCT, hence the high levels of "don't know". Findings indicate that the situational

antecedent i.e. Complexity and ineffectiveness of training and the dispositional antecedents i.e. Attitude towards computers and Computer competency are statistically significant to PEOU.

PEOU refers to the perception that the use of WebCT should be possible without much extra effort. From the interviews, some lecturers who are familiar with WebCT, view "effort" not necessarily as "difficult", but refer to other inhibiting factors that influence their perception of ease. "Effort" is also referred to because of the initial start-up phase in learning and understanding WebCT. Although WebCT is regarded as a timesaving technology, to start off initially is time-consuming. The user-friendliness (which has been defined in the literature similarly to PEOU) of WebCT, is one of the facilitating factors of WebCT use. A supplementary software programme, called Respondus must be used to design short answer and multiple-choice questions for assessment on WebCT. A few lecturers felt that Respondus is not user-friendly, which then creates the perception that WebCT is difficult to use. In addition, Respondus is not dealt with in training sessions.

If lecturers have a negative Attitude towards computers in general, they are more likely to find WebCT difficult to use. "Mindset" and preference for the traditional face-to-face teaching method were identified as barriers to learning and understanding WebCT. The traditional way of teaching is known for its educational value and also because it is perceived as "easier" and "familiar", as opposed to computer-based teaching methods, which are perceived as burdensome. Lecturers rated their Computer competency in terms of WebCT and other technology. Compared to other technology, they perceive their own skills and knowledge as limited to learn and understand WebCT. Because WebCT is web-based, it creates the impression of difficulty.

The perception that WebCT is difficult to use can be addressed by matching lecturer's skills to the training that is required. As previously discussed, training is the starting point to acquire the foundation knowledge and skills to learn and understand WebCT.

4.6.4 PERCEIVED USEFULNESS (PU)

The majority of the respondents viewed PU of WebCT as more important to PEOU, since the overall mean responses for PU were between "Slightly likely" and "Quite Likely", compared to PEOU the overall mean were between "Don't know" and "Slightly likely". Compared to PEOU, PU is also more strongly correlated to WebCT utilisation statistically. This is consistent with two studies conducted by Davis (1989): PU had a significantly greater correlation with utilisation than did PEOU. However, the lecturers that are not entirely aware of the potential usefulness of WebCT are still prevalent. This is in agreement with the finding of Cronje and Murdoch (2001) that "lack of knowledge about technology" and "too little knowledge of WebCT to use it optimally" impacted on PU of WebCT.

Situational variables, i.e. Complexity and ineffectiveness of training and Time constraint are not statistically significant antecedents of PU. However, in the interviews both were identified as having a significant impact on PU. The inconsistency of the survey finding and the interview results are interesting and further research is necessary to establish the importance of situational factors with regard to PU of WebCT in the faculty.

Both dispositional variables, Attitude towards computers and Computer competency are moderately significant antecedents of PU, while the interview results only identified Attitude towards computers is an inhibiting factor to PU. However, antecedents that are moderately significant need further research because of the limited knowledge about WebCT that may have impacted on the perceptions of lecturers. With increased awareness about PU of WebCT, lecturers may develop the disposition to effect change. Future research might establish that with adequate knowledge about WebCT, the identified dispositional variables may be strongly significant to PU.

4.6.5 WEBCT ADOPTION

PEOU and PU were found to be statistically significantly correlated to WebCT adoption. Even though the majority of the lecturers are not using WebCT, lecturers are more inclined to utilise WebCT if it is perceived as easy and useful.

It was hypothesized that lecturers, who perceive WebCT as easy to use, will be more predisposed to adopt WebCT. This hypothesis has been found to be as statistically significant: PEOU impacts positively on WebCT utilisation. This is in agreement with Gefen's (2003:108) findings that PEOU and PU do increase intentions for use, even though his study focused on the element of habit in user's behaviour intent to use a technology. The significance of PEOU to WebCT adoption in the faculty is of particular importance because the perception of difficulty could be addressed through training programmes, frequency of opportunity to practice, and in this way adoption may be increased.

There is a statistically strong correlation between PU and WebCT utilisation. This finding is corroborated by Chau (2001) and prior studies, e.g. Davis (1989), Harris et al., (2001), etc., that PU is a strong variable to predict the actual usage of a technology. This suggests that lecturers would only use WebCT if it were perceived to be of any value and benefit to them, even if it is perceived as fairly difficult to learn and understand. Various studies have concluded that the perceived characteristics (PEOU and PU) had a direct effect on utilisation (Davis, 1989; Harris, 2001; Igbaria et al., 1999).

In the alternative analysis, PEOU does not show statistical significance to WebCT utilisation. When the "don't know" is excluded, it reflects the lecturers that have knowledge of WebCT, but not all are active users. Harris et al (2001) found that self- report utilisation versus actual utilisation revealed that nearly 30% of the respondents who reported using the specified technology had no activity during the three-month period of analysis. In addition, the respondents reported higher utilisation compared to their actual utilisation. This is of particular importance because the actual utilisation of WebCT was not established in this study; findings were based on self-report utilisation. This suggests usage rates may be even lower than the low rates reported.

4.7 SUMMARY

Even though most participants were not well informed about WebCT, all of them know about WebCT and have access to regular training schedules via e-mail, facilitated by the e-learning department. Generally, most of the participants are eager to learn and use WebCT, but need to overcome some of the barriers as identified in this chapter. The general feeling is that there is a place for WebCT in the faculty; as a support tool blended with the traditional teaching methods. Management could play a more prominent role in terms of creating a WebCT presence, offer support and to allow specified time for training in the faculty. As identified in the interviews there is a need for a dedicated specialist to drive WebCT in the faculty.

The triangulation of the semi-structured interviews with the survey questionnaire allowed the researcher to "double check" the findings and to allow the strength of the one source of evidence to be compensated for by the weakness of the other. It should be noted that the "no responses" in the interview analysis could be attributed to the fact that participants felt reluctant or embarrassed to verbalize their lack of knowledge about WebCT, or that they were not adequately probed. The "don't know" scores in the questionnaire could be because ignorance or limited knowledge about WebCT.

The next chapter consists of the concluding remarks, limitations of this research and recommendations for future research.

CHAPTER FIVE

OVERVIEW, RECOMMENDATIONS, LIMITATIONS OF THE STUDY AND CONCLUDING REMARKS

5.1 INTRODUCTION

The implementation of WebCT for course delivery will, like any other technology present some challenges. The inhibiting factors have been investigated, and the impact of these inhibitors on the adoption of WebCT has been established. In view of this, and given the limitations of the study, recommendations that are suggested in this chapter serve as a guideline for WebCT adoption in the faculty. The chapter starts with an overview of the study and ends with concluding remarks.

5.2 OVERVIEW OF THE STUDY

This research highlighted important factors related to the adoption of WebCT in the faculty of Management at the Cape Peninsula University of Technology. The assumption was made that there are certain antecedent factors that influence WebCT adoption. All academics are aware of WebCT and have access to regular training schedules via e-mail, facilitated by the e-learning department. The low adoption of WebCT was investigated, and a research model was formulated based on prior diffusion of innovation and technology acceptance literature. The case study as a research approach was followed, using quantitative and qualitative methods. The quantitative method comprised of a survey and the analysis was done on SPSS. The qualitative method comprised of semi-structured interviews, analyzed by the code-and-retrieve technique and where

the data was reduced according to the conceptual framework of this study into a more focused display of corresponding themes or constructs.

The analysis of the survey and the interviews suggest that there are certain situational factors that inhibit the adoption of WebCT, such as:

- Complexity and ineffectiveness of training is the situational antecedent of PEOU and PU.
- Time constraint is a situational antecedent of PU.

The dispositional antecedents were found to be:

- Attitude towards computers are dispositional antecedents of PEOU and PU.
- Computer competency is a dispositional antecedents of PEOU, but not to PU.

There is a positive relationship between PEOU and PU and WebCT utilization, which imply that lecturers are more inclined to utilize WebCT if it is perceived to be easy and useful.

The survey and the interviews also indicated other factors that can also be classified as inhibitors:

- Lack of knowledge/limited knowledge about WebCT amongst lecturers;
- Support staff in the faculty is not available to assist lecturers to implement WebCT;
- Top management and heads of academic units do not actively support or promote the adoption of WebCT in the faculty;
- Academics are skeptical about the educational value of WebCT

5.3 RECOMMENDATIONS

Following the previous section, the following recommendations are made:

- WebCT training to be prioritized. Management at the departmental and faculty level, should be encouraged to allocate time for training that does not inflict on current workload of lecturers;
- Lecturers should be encouraged to acquire the appropriate skills to learn and implement WebCT. Small groups of lecturers could be identified to experiment with Web-based course development.
- Incentives. Potential adopters may become unwilling to sacrifice other incentives (e.g. financial incentives from research publications) to work on technology integration in their courses. Compensation for time spent on designing and managing online courses is often not considered. Often lecturers resist a new innovation because it is viewed as extra work and therefore it will take extra effort to implement.
- Senior level management could ensure that WebCT is integrated in the course structures, making web course management an integral part of management education. Existing curricula could be complemented by Internet based projects. This could expedite adoption of WebCT since a number of lecturers are of the view that top management in the faculty does not actively drive WebCT.
- A dedicated specialist should drive WebCT in the faculty. The identified person should have close liaison with the e-learning department and should ensure that the procedures for quality assurance are upheld.

- The policy makers of the faculty should have a clear vision and mission of WebCT as a course management system through which high quality learning can be facilitated.

The e-learning department could consider the following suggestions:

- Consideration should be given to the perceptions of lecturers toward Web course management and Web-based teaching and learning. Lecturers are confronted with large classes, organisational realignment, continuous assessment, the integration of WebCT and contact lectures, quality assurance, time constraints, etc. Lecturers need continuous support to effectively use WebCT. Training courses should be designed in such a way that perceived ease of use and perceived usefulness of WebCT from the perspectives of the lecturers are taken into account. Lecturers cannot realize the benefit from WebCT if it is too difficult to use. Even though its user-friendliness is an important factor for adoption, the value of WebCT as a course management system should be continuously emphasised .
- Close liaison with a dedicated WebCT specialist in the faculty.

The above recommendations do not elaborate on the implementation, neither the advantages nor disadvantages of each.

5.4 LIMITATIONS OF THE RESEARCH

The findings of this research are not necessarily generalisable to the wider population of South African HEI's that have adopted WebCT. This research was conducted at one research site. The data collected reflects the specific organizational context and events at the Cape Peninsula University of Technology: Management Faculty. The institution is currently undergoing

organisational realignment, which could be one of the reasons why WebCT is not presently actively marketed at the faculty under study. It would have been an interesting extension of this study to investigate the diffusion of WebCT across the entire institution.

5.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The technology acceptance and diffusion literature are well documented and tested in diverse studies. However, the following are recommended from shortcomings in the literature and in this particular study:

- Although this study focused on the lecturers, it would be interesting to investigate the perceptions of learners from diverse backgrounds with regard to the integration of the Internet in teaching and learning at CPUT.
- This study could be generalized to other faculties at this institution since WebCT is also available to them.
- Concern about the academic quality of WCMSs. Further research is needed to investigate quality and security of assessments in web-based educational technologies at HEIs.

5.6 CONCULDING REMARKS

The introduction of Web-based learning in HEIs, its educational value and benefits is an ongoing debate. Whilst there is increase awareness of the technological development that must occur in HEIs in order to prepare students to compete internationally, there is also skepticism about the benefits of Web-based learning and the changes that the adoption of Web-technologies necessitate.

In this study, the adoption or hesitation to adopt WebCT has been investigated. The majority of the lecturers are eager to learn and use WebCT and will more than likely embrace the adoption of WebCT if the barriers to use are not perceived as insurmountable. The researcher is of the view that there should be a deliberate intervention from management and heads of academic units to create a WebCT presence in the faculty. In this way, management's e-learning strategies could be intensified and a high quality web-course management system can be developed for the faculty.

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APPENDIX A: Questionnaire

SECTION A: As stated in the covering letter, the questionnaire is anonymous. I do however need some personal information from each participant regarding department, age, sex, lecturing courses, etc. to assist in the analysis of the results. This information will remain confidential.

Department (please write): _____ **A1**

Current Lecturing Course(s): (please write): _____ **A2**

_____ **A3**

_____ **A4**

_____ **A5**

Complete the following by marking with an X

Lecturing Experience in years (please write): _____ completed in years. **A6**

Gender: ① Male ② Female **A7**

Age: ① **21 – 25 yrs** ② **26 – 30 yrs** ③ **31 – 40 yrs** ④ **41 - 50 yrs** ⑤ **> 50 yrs** **A8**

Experience with WebCT in years (please write): _____ completed in years **A9**

Web CT Training: ① Yes ⓪ No When: _____ **A10/A11**

How often do you use WebCT in your current course/offering? **A12**

① Monthly ② Once a week ③ Several times a week
④ Once a day ⑤ Several times a day ⓪ None

Rate your competence with WebCT **A13**

④ Advanced ③ Good ② Average ① Low ⓪ None

SECTION B: Please complete the following by marking with an X.

PERCEIVED USEFULNESS

1. When I first learnt about WebCT I knew it would improve my job performance. **B1**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

2. When I first learnt about WebCT I knew it would make it easier to do my job. **B2**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

3. When I first learnt about WebCT I knew it would increase my productivity. **B3**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't Know

4. When I first learnt about WebCT I knew it would be useful in my job.

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

PERCEIVED EASE OF USE

5. When I first learnt about WebCT, I knew I would get WebCT to do what I want it to do. **B5**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

6. When I first learnt about WebCT I knew that I would find it clear and understandable. **B6**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

7. I am likely to find WebCT flexible to work with. **B7**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

8. It is be easy for me to become skilful at using WebCT. **B8**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

SECTION C

COMPUTER COMPETENCY

Rate your competency of technology daily:

1. Word Processor: ③High ②Average ①Low **C1**
2. Spread Sheet: ③High ②Average ①Low **C2**
3. Email: ③High ②Average ①Low **C3**
4. Web: ③High ②Average ①Low **C4**

5. Generally, I find working with computers difficult. **C5**

Agree ☐ extremely ☐ quite ☐ slightly Agree ☐ slightly Disagree ☐ quite ☐ extremely **Disagree**

6. Generally, I think computers do not enhance my effectiveness to do my job. **C6**

Agree ☐ extremely ☐ quite ☐ slightly Agree ☐ slightly Disagree ☐ quite ☐ extremely **Disagree**

7. Learning to operate WebCT is (or would be) easy for me. **C7**

Agree ☐ extremely ☐ quite ☐ slightly Agree ☐ slightly Disagree ☐ quite ☐ extremely **Disagree**

8. My current level of computer competency does not (or will not) allow me to find WebCT useful. **C8**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

9. My current level of computer competency does not (or will not) allow me to learn and operate WebCT. **C9**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

SECTION D

ATTITUDE TOWARDS COMPUTERS

1. Computers brought us into a bright new era. **D1**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

2. It is important to use computers for educational purposes. **D2**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

3. There are unlimited possibilities of computer applications that haven't even been thought of yet. **D3**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

4. Computers allow us to get things done easier. **D4**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

5. I enjoy exploring new things on my computer. **D5**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

SECTION E

NATURE OF TRAINING AND SUPPORT

1. The training to use WebCT is very complex. **E1**

Likely ☐ ☐ ☐ ☐ ☐ ☐ **Unlikely** ☐
extremely quite slightly Likely slightly Unlikely quite extremely Don't know

2. The instructor explained how to do use WebCT clearly. **E2**

Likely ☐ ☐ ☐ ☐ ☐ ☐ **Unlikely** ☐
extremely quite slightly Likely slightly Unlikely quite extremely Don't know

3. I am (or will be) more productive in using WebCT, after I have attended a WebCT training session . **E3**

Likely ☐ ☐ ☐ ☐ ☐ ☐ **Unlikely** ☐
extremely quite slightly Likely slightly Unlikely quite extremely Don't know

4. I found WebCT training easy, but when I am on my own I am confused. **E4**

Likely ☐ ☐ ☐ ☐ ☐ ☐ **Unlikely** ☐
extremely quite slightly Likely slightly Unlikely quite extremely Don't know

SECTION F

TIME CONSTRAINTS

1. I do not know what WebCT can do for me because of my lack of time. **F1**

Agree ☐ ☐ ☐ ☐ ☐ ☐ **Disagree**
extremely quite slightly Agree slightly Disagree quite extremely

2. If I had more time, I will use WebCT to enhance my effectiveness on the job. **F2**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

3. To learn and understand a technology like WebCT will take up too much of my time. **F3**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

4. I have sufficient time to work on WebCT. **F4**

Likely ☐ extremely ☐ quite ☐ slightly Likely ☐ slightly Unlikely ☐ quite ☐ extremely **Unlikely** ☐ Don't know

SECTION G

List the things that (please write):

A. Makes it difficult for you to use WebCT

1. …….. …….
2. ……
3. ……
4. ……..

B. Encourages you to use WebCT

1. ……
2. ……
3. ……
4. ……

Are there any additional comments you wish to make regarding your experiences with WebCT? (please write)

……

……

……

……..

Thank you once again for your time.
Carina America

APPENDIX B: Interview responses

	Q1: Do you think WebCT is easy to use?	Q2: Do you think WebCT is useful?	Q3: Any other factors that make it difficult or encourage you to use WebCT?*
PARTICIPANT 1 (non-user)			
1. PEOU	difficult		
2. PU	useful	yes, useful	
3. Attitude towards computers	overcome mindset	mindset-traditional way	e-learning is distant
4. Computer competency(cc)	need cc to use WebCT		
5. Time constraints	no time	deadlines	
6. Nature of training and support	training needed		
OTHER FACTORS			
1. time to practice	*		
2. not driven from the top		*	
3. support tool		*	
4. nature of subject		*	
5. no prescence of WebCT			*
6. limited knowledge			*
7. less security with assessment			*
PARTICIPANT 2 (non-user)			
1. PEOU	yes, easy	yes	
2. PU	useful		useful
3. Attitude towards computers		encouraging [mindshift pos]	
4. Computer competency (cc)	need basic cc to use WebCT		
5. Time constraints	no time	no time	
6. Nature of training and support	needed		yes
OTHER FACTORS			
1. practice important	*		
2. no time to practice	*		
3. infrastucture at Hotel School	*		
4. student cc			*
5. student benefits useful		*	
6. support tool		*	
7. usefulnes not established			
because of lack of time			*
PARTICIPANT 3 (user)			
1. PEOU	easy	yes	*
2. PU		yes	
3. Attitude towards computers	pos approach - can do so much	pos approach	

4. Computer competency(cc)	need cc to use WebCT		
5. Time constraints		limited time	
6. Nature of training and support	training needed	need support	
OTHER FACTORS			
1. assessment not flexible		*	
2. WebCT saves time		*	
3. first year students not cc		*	
4. Respondus battle		*	
5. benefits to students			*
6. useful to monitor students			*
7 limited use for teaching writing			*
PARTICIPANT 4 (non-user)			
1. PEOU	easy because developed for students		
2. PU		no useful	
3. Attitude towards computers		pos approach	
4. Computer competency(cc)	cc beneficial	yes	not all lecturers are cc
5. Time constraints			
6. Nature of training and support	needed for lecturers		lecturers need support
OTHER FACTORS			
1. not sufficient knowledge	*		
2. not all students are cc	*		
3. distance learning useful		*	
4. expensive system: not educationally used		*	
5. nature of subject		*	
6. addition to workload			*
7. support tool			*
8. benefits to students			*
PARTICIPANT 5 (non-user)			
1. PEOU	yes, easy		
2. PU		useful	
3. Attitude towards computers		pos approach	e-learning is important
4. Computer competency(cc)	yes, basic cc		
5. Time constraints			time constraints
6. Nature of training and support	training helps		
OTHER FACTORS			
1. not driven by management	*	*	
2. need support in faculty	*	*	
3. merger an inhibitor-job insecurity			*
PARTICIPANT 6 (user)			
1. PEOU	yes, easy		

2. PU	useful, cuts down on printing	yes, definitely	
3. Attitude towards computers	pos approach	pos approach	
4. Computer competency(cc)	need cc to use WebCT		
5. Time constraints			
6. Nature of training and support	training helps		
OTHER FACTORS			
1. need support to start	*		
2. useful to stick to deadlines	*		*
3. no extra effort	*		
4.communication to students clear		*	
5. student's cc problem		*	
6.looking forward to assessment on			
WebCT			*
PARTICIPANT 7 (non-user)			
1. PEOU	not easy		
2. PU		not sure	
3. Attitude towards computers	mindset to overcome	mindset-traditional way	
4. Computer competency(cc)	need cc to use WebCT	not cc	
5. Time constraints			
6. Nature of training and support	training needed		
OTHER FACTORS			
1. hard copies preferred			*
2. traditional way preference			*
3. Mindset to get over			*
PARTICIPANT 8 (ex-user)			
1. PEOU	yes, easy		
2. PU		yes, useful	
3. Attitude towards computers	positive attitude		
4. Computer competency(cc)	cc needed		
5. Time constraints	lack of time	lack of time	time constraints
6. Nature of training and support			need training
OTHER FACTORS			
1. Maintaining &monitoring difficult	*		
2. Distance learning useful	*	*	*
3. Extra workload	*		
4. Students want hard copies			*
5. Support from faculty			*
6. Assessment & quality control			*
PARTICIPANT 9 (non-user)			
1. PEOU	don't know		

2. PU		think it will be useful	
3. Attitude towards computers	eager to learn(pos attitude)		eager to learn
4. Computer competency(cc)			
5. Time constraints		lack of time	
6. Nature of training and support		yes, needed	
OTHER FACTORS			
1. Students will benefit		*	
2. Students receptive to technology		*	
3. Not enough knowlegde			*
4. Receptive to benefits of WebCT			*
5. Tech development important			*
6. Driven from the top			*
7. Specific time allocated to learn WebCT			*
PARTICIPANT 10 (non-user)			
1. PEOU	difficult		
2. PU		yes, definitely	
3. Attitude towards computers	fear factor		
4. Computer competency(cc)	cc needed		
5. Time constraints	lack of time		lack of time
6. Nature of training and support	need training	support system	
OTHER FACTORS			
1.timing of training	*		
2.lack of knowledge	*		
3.student access at night			*
4.WebCT is something for the future			*
5.paper overload			*
6.benefits for students			*
PARTICIPANT 11 (non-user)			
1. PEOU	easy		
2. PU		yes, useful	
3. Attitude towards computers			
4. Computer competency(cc)	basic cc needed		
5. Time constraints			lack of time
6. Nature of training and support		training needed	
OTHER FACTORS			
1.not all students cc	*		
2.unfair advantage for students			
with Internet at home		*	*
3.distance learning		*	

4.nature of subject		*	
5.limited knowledge			*
6.driven by top management			*
7.training should be compulsory			*
8.management should allocate			*
time for training			*
9.need technology to stay ahead			*
10.dedicated person in faculty			*
PARTICIPANT 12 (non-user)			
1. PEOU	don't know		
2. PU		think so	
3. Attitude towards computers			pos approach
4. Computer competency(cc)		cc needed	
5. Time constraints			time is no excuse
6. Nature of training and support			*
OTHER FACTORS			
1.limited knowledge		*	
2.need technology to stay ahead			*
3.no marketing done to promote			*
WebCT			
4.value unknown			*
PARTICIPANT 13 (non-user)			
1. PEOU	easy		
2. PU		can be useful	
3. Attitude towards computers	positive attitude		
4. Computer competency(cc)	basic cc needed		
5. Time constraints		no time	no time
6. Nature of training and support	need training		
OTHER FACTORS			
1.time consuming to start			
2.benefits to students	*	*	
3.infrastructure at Hotelschool			
inhibiting	*		*
4.mindset of people must change	*		
5.management should make			
time available		*	
6.support from top management			*
7.need technology to stay ahead			*

APPENDIX C: Male and Female responses per department

Departments	Population		Reponses received		% Response per department		% Response per Department	% Responses per total Responses Received
	M	F	M	F	M	F		
Academic Development & Support*	5	3	4	3	80.00	100.00	87.50	13.5
Graduate Centre Man	1	2	1	1	100.00	50.00	66.67	3.8
Hotel School	2	8	1	5	50.00	62.50	60.00	11.5
Human Resources Man	3	3	3	3	100.00	100.00	100.00	11.5
Management	5	4	5	4	100.00	100.00	100.00	17.3
Marketing*	3	4	1	2	33.33	50.00	42.86	5.8
Public Relations*	1	5	1	5	100.00	100.00	100.00	11.5
Research*	2	0	2	0	100.00		100.00	3.8
Retail Business Man	4	2	1	2	25.00	100.00	50.00	5.8
Sport Management	4	0	2	0	50.00		50.00	3.8
Tourism Man	3	5	3	3	100.00	60.00	75.00	11.5
Total	33	36	24	28	72.7	77.8		100

*Four pilot respondents from the four departments excluded

APPENDIX D: Summary of Interview Responses

Q1: Do you think WebCT is easy to use?	
WEBCT PEOU	**Responses**
WebCT easy	8
WebCT not easy	3
Not enough knowledge	2
Attitude towards computers	
Mindset w.r.t computers positive	5
Mindset w.r.t computers negative	3
No response	5
Computer competency(CC)	
CC necessary to find WebCT easy	11
CC not necessary to find WebCT easy	
No response	2
Time constraints	
Lack of time	4
Time no excuse	
No response	9
Training and support	
Training would help	9
Training not necessary	
No response	4

Q2: Do you think WebCT is useful?	
WEBCT PU	**Responses**
WebCT useful	11
WebCT not useful	1
Not enough knowledge	1
Attitude towards computers	
Mindset w.r.t computers positive	6
Mindset w.r.t computers negative	2
No response	5
Computer competency	
CC to find WebCT useful	4
CC not necessary to find WebCT useful	
No response	9
Time constraints	
Lack of time makes it difficult to find WebCT useful	8
Time is no excuse to find WebCT useful	1
No response	4
Training and support	
Training would help	7
Training not necessary	
No response	6

APPENDIX E: Responses to Section G of questionnaire

Factors that inhibit participants to use WebCT	**Responses Received**
Time constraints & workload	28
Computer competency & lack of knowledge	18
Training and support	14
Attitude	6
Infrastructure	6
Setting up of Quizzes	1
Preparation of material	1
Marketing not done	1
Student lack of interest	1
Assessment methods untested	1
Factors that encourage participants to use WebCT	
Assessments benefits	11
Training & support	10
Time	2
Student benefits	15
Computer attitude/benefits of WebCT	23
Additional Comments	
No knowledge of WebCT	4
Not useful	5
Benefits & Training	7
Management Support	3
Time constraints	2