

**ANALYSIS OF THE FACTORS AND ATTITUDES THAT
INFLUENCE LECTURERS READINESS TO ADOPT
DISTANCE EDUCATION AND THE USE OF ICT IN
TEACHING: THE CASE OF THE UNIVERSITY OF
NAIROBI.**

BY

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**A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENT FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY IN OPEN AND DISTANCE
LEARNING OF THE UNIVERSITY OF NAIROBI.**



**DEPARTMENT OF EXTRA-MURAL STUDIES
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JUNE 2006

DECLARATION

This thesis is my original work and has never been presented for a degree in any other university.

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Christopher M. Gakuu, 2006

ACKNOWLEDGEMENTS

The completion of this thesis is a result of the exceptional support and sacrifice made by a number of organizations and individuals. First, I would like to express my invaluable gratitude to Kenya –Belgium Co-operation Programme (VLIR) for sponsoring my Ph.D studies.

Second, I am indebted to all the people who, in one way or the other, facilitated my research work. I am particularly indebted to my supervisors, Professor Arno Libotton of Free University of Brussels (VUB), Dr. Elijah Oniwenga and Dr. Robert Ayot both of University of Nairobi who consistently and patiently dedicated their intellectual contributions which greatly shaped this study. Though the ideas were purely mine and all residual errors or omissions are solely my responsibility, the supervisors are and will remain my mentors in matters concerning research. I would like to specially express my heartfelt gratitude to Professor Libotton in person for introducing me to other professors in Europe (in particular Professor Despontin with whom we discussed the relevant statistical tools for this research study). In addition to my supervisors, I am indebted to professors Georges Eisendrath, Kenneth Mavuti, Henry Mutoro, Timothy Waema and all other scholars for their support, guidance and cooperation.

Third, I am indebted to my fellow Ph.D students at the University of Nairobi, Mrs. Harriet Kidombo, Mr. Omroni Bowa, Mr. Robert Oboko, Patricia Muchiri(also for the editorial work) and Andrew Mungai for their invaluable support, cooperation and help.

I am greatly indebted to my father Joseph Gakuu and my brothers Francis Muriuki Gakuu, Charles Maina Gakuu, my sisters Jane Wandia and Esther Gathigia for the support they gave my family when I was in Belgium pursuing my studies. In particular, I am indebted to Joe Watson Gakuu who worked with me as a research assistant.

I cannot forget the much moral support I got from the families of James Kamunge Ngoima, Peter Mucheru Mwaura and Moses Muriithi.

Last but certainly not least, I acknowledge with deepest gratitude the moral and spiritual support I got from my dear and loving wife Ruth Wanjiru Njora, my daughter

Florence Wambui, my sons, Joseph Gakuu and Livingstone Njora who all missed my fatherly love when I was occasionally away in Belgium.

DEDICATION

This work is dedicated to my wife and children
Wanjiru, Wambui, Gakuu and Njora with love.

ABSTRACT

There has been a very low rate to adopt distance education and the use of information communication technology (ICT) based instructional delivery modes in the University of Nairobi by lecturers. This situation has hampered the expansion of distance education to all disciplines in the university.

The aim of this research was to analyze the factors that influence the University of Nairobi lecturers' readiness to adopt distance education and the use of ICT based instructional delivery modes, and how lecturers' attitudes influence their readiness to adopt distance education and the use of ICT in teaching. Several studies conducted in both the developed and developing countries have generally agreed on the factors that deter lecturers from adopting ICT in delivering instruction in distance education (DE). The main factors cited by such studies are: increased time commitment (workload) for academic staff; lack of extrinsic incentives or rewards; lack of technical and pedagogical support; philosophical, epistemological and social objection. This study examined the factors that are critical in influencing the University of Nairobi lecturers' attitudes towards DE and their readiness to adopt distance education and the use of ICT in teaching.

A structured questionnaire designed to elicit information on the factors and how their attitudes may influence their readiness to adopt ICT in distance education, was administered to a stratified sample of lecturers in all the six colleges of the University. Factor analysis and analysis of variance (ANOVA), and Multivariate analysis of variance (MANOVA) were the main tools used to analyze the data.

The results indicate that the factors that influence lecturers' participation in distance education in other institutions in the world are basically the same and also important to the University of Nairobi lecturers. It is also apparent that lecturers' attitudes towards the adoption of DE are not negative as hypothesized. There is no significant difference of attitude towards the adoption of DE between the various university colleges. Level of readiness for adoption varies according to the college. There was

significant difference in readiness to adopt DE between the colleges. Results indicate that there is a linear relationship between readiness to adopt DE(dependent variable) and the independent variables. It is evident that there is significant positive relationship between readiness to adopt DE and training in DE; formulation of an open and distance learning (ODL) policy; support from the University administrators; incentives provided to lecturers while participating in DE activities. However, there was a negative relationship between readiness to adopt DE and the efforts the lecturers are expected to put in translating course materials into DE formats; the time commitment the lecturers must sacrifice in DE activities and formulation of an intellectual property rights policy. The result also indicates that the University of Nairobi lecturers support the use of E-learning in teaching. The results also indicate that lecturers from “hard” science disciplines, (College of Agriculture and Veterinary Sciences (CAVS), College of Physical Sciences and Biological (CPBS), College of Health Sciences (CHS) and College of Architecture and Engineering (CAE) differ from social science (CEES and CHSS) lecturers in terms of the importance they attach to the factors that influence their readiness to adopt the use of ICT in teaching.

Operational definition of terms

1. **Adoption:** A lecturer's/instructor's acceptance or rejection to participate in distance education activities.
2. **Attitude:** A lecturer's/instructor's feelings or perception towards the adoption of Distance Education in the University of Nairobi.
3. **E-learning(Electronic learning):** Learning using any of the computer based methods.
4. **Lecturer/faculty/instructor/ teacher:** An individual who has been hired full-time or on part-time basis to give instruction to registered University of Nairobi students.
5. **Readiness:** A lecturer's/instructor's state of mental readiness to participate in distance education activities.
6. **Regular course:** A course that is taught face-to-face. The teacher and the student are at the same place at the same time. It is alternatively called the synchronous teaching.

Abbreviations and Acronyms

- 1. AERA:** American Educational Research Association.
- 2. APA:** American Psychological Association.
- 3. ALN:** Asynchronous Learning Networks.
- 4. ALNS:** Asynchronous Learning Networks Systems
- 5. ANOVA:** Analysis of Variance
- 6. CA E :** College of Architecture and Engineering
- 7. CAVS:** College of Agriculture and Veterinary Sciences
- 8. CBAM:** Concern Based Adoption Mode
- 9. CBPS:** College of Biological and Physical Sciences
- 10. CEES:** College of Education and External Studies
- 11. CHS:** College of Health Sciences
- 12. CHSS:** College of Humanities and Social Sciences
- 13. CODL:** Center for Open and Distance Learning
- 14. C.R.I:** Course Redesign Initiative
- 15. DE:** Distance Education
- 16. DL:** Distance Learning
- 17. DT:** Distance Teaching
- 18. ECER:** Exceptional Child Education Resources.
- 19. ERIC:** Educational Resources Information Center.
- 20. F.S.U:** Florida State University
- 21. ICT:** Information Communication Technology.
- 22. N.E.A:** National Education Association
- 23. ODL:** Open and Distance Learning.
- 24. OLE:** On-line Education.
- 25. WWW:** World Wide Web.

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CHAPTER ONE

INTRODUCTION

1. 1 BACKGROUND INFORMATION

An Overview

Major organizational changes and new developments in higher learning are taking place at an accelerated pace by the dynamic advances in global digital communication and sophisticated learning technologies. Distance education has not been left behind by the changes which have necessitated the general educational changes particularly in the use of information and communication technology (ICT) in instructional delivery. Distance Education has played a role in this unfolding drama particularly in the use and application of telecommunication technologies. Education is regarded as one of the main pillars of development and hence accessibility to it is critical in the development agenda of any country. Distance education could be the panacea of access to equal opportunities for all citizens of a country irrespective of gender, location, race or tribe. A recent report LEONE (2004) titled *“Weak signals survey on national and international evolution of learning”* states that by 2020, education will be technology- based, learning and training will become a life-long activity and life-long learning will be possible for everybody. Education and training, it continues to say, will be tailored to individual needs, and students will be more responsible for learning and that the learning process will be more a learner driven activity, which allows fast changes that would not be possible in a teacher driven system.

The pangs of globalization have not spared the educational sector and universities on both sides of the digital divide are confronted by a new mode of competition. It is also evident that distance education has become a mode through which universities faced with dwindling state funding, can generate more revenue locally, regionally and globally. Universities, particularly in the developing world, should respond to this challenge by pragmatically offering courses by distance, at least to protect their local students' catchments markets. Public universities and in particular the University of

Nairobi should inevitably invest in distance education as matter of survival and growth.

It is evident that barriers to accessing higher learning opportunities are being reduced globally because of improved learning technologies. Hanna (1999) and Dillon (1989) observe that while learning technologies have continued to change attitudes often remain the same. Education is now seen as a social institution (a transnational or “world cultural” phenomenon) where educational developments evolve at the level of a world culture. There is an axis-shift in the transfer of information, from the conventional classroom to distance education. This will help in overcoming the tyrants of distance between the student and the teacher. Apparently, students can now either select a scholastic discipline or enrol in a university and hence broaden their life opportunities in whatever physical location they may be.

Many universities and even countries have been downplaying the role of distance education (DE) on the assumption that it would undermine traditional education, limit student interaction with peers and lecturers and eradicate the platform for which a deliberate academic discourse takes place. Mathews (1999). According to the findings of various studies on the quality of distance education, such a feeling can only be attributed to misconceptions by those who propagate it. However, one cannot just dismiss such concerns because distance education operates differently from the traditional face –to-face education. Hence, there is bound to be concerns particularly from the lecturers and students shifting from the conventional education to the distance mode.

It is noteworthy that many countries are starting to appreciate the role distance education can play in educational development of their economies particularly in alleviating poverty. This is so because education is seen as a means of empowering an individual to effectively and efficiently perform in the society and hence raise his or her standard of living. Access to educational opportunities for all is a major challenge facing many countries. Distance education, no doubt, should be one of the means to increase and broaden access to education.

As the changes continue to unfold, distance education providers must reconsider the instructional delivery modes that keep pace with the ever changing technological developments. The use of telecommunication to establish and deliver distance education has led to a revision of distance education's formal definition. The United States Distance Teaching Association (1998), defines distance education as 'the acquisition of knowledge and skills through mediated information and other forms of learning at a distance'. According to Wegner (1999), the new instructional delivery mode has not only transformed the role of student, but the course instructor as well. Crum Packer (2001), points out that, as it has been the case with each progressive innovation, course instructors must learn to apply their expertise to the new learning milieu and that instructor training and developments should continue to be integral parts of the transformation process.

The continuing trend by business organizations and national governments to improve and reduce costs of advanced telecommunications technologies will, perhaps, encourage higher education providers to invest more in the use of ICT in distance education. However, from the tremendous research studies findings, particularly from the developed countries, many faculty (lecturers) members possess negative perceptions and attitudes that serve as barriers to the adoption of ICT in DE, its implementation and success. Marshal (2003). One major concern among lecturers is the severing of interpersonal and personal contacts between instructors and students (Marshal Harper and Robert Marshal, 2003). This is normally solved by developing an effective learner support service system that ensures that the teacher and the student have some sort of contact either by organizing face-to-face sessions or through any of the ICT technologies. According to the Marshals, some lecturers feel that the separation of the teacher and the student will result in loss of effectiveness in the learning process. This observation was also confirmed in my pilot study findings conducted on the same topic in 2005 (Gakuu, C.M, June, 2005). Lecturers particularly in the Faculty of Science and the Faculty of Arts, who had not participated in distance learning, said that the separation of teacher and student was a major concern to them. The lecturers who had prior participation in DE activities said that the separation was not a major concern. Marshals (2003), note that to meet the needs of faculty engaged in distance learning (DL) and to encourage or motivate others to venture into the

world of course delivery via telecommunications, universities face the daunting challenge of creating environments that limit stress and negative motivational factors. Betts (1998), concurs by saying that the success of a DE programme is dependent upon the enthusiasm of the faculty teaching through the distance media. However, Bett's assertion was not based on any empirical evidence.

Distance education relies heavily on information communication technology (ICT) for its instructional delivery. For a successful implementation of ICT in DE, there are several requirements that need to be met, such as the preparation of study materials, the management of the dissemination and exchange of information through technological means, the constant upgrading of the coursework and the professional development of the lecturers in the use of technology in education. However, for this to get the clout and support it requires, the institution must consider what attitudes one of its main stakeholders (lecturers) have towards the new initiative and their state of preparedness to participate.

Several researchers have warned of the inherent problem of ignoring lecturers' beliefs about any form of technologies Czeniak (1999). For successful implementation of a DE programme, it is critical for the institution to consider establishing perceptions, and the attitudes of their lecturers (Tobin, Toppings, and Gallard, 1994). A study by Wolcott (1997) based on interviews with faculty members, programme administrators and the chief academic officers at four US research universities, concludes that:

- (i) Distance Education occupies a marginal status.
- (ii) Distance Teaching is neither highly valued nor well-rewarded as a scholarly activity.
- (iii) Distance Teaching is not highly related to promotion and tenure decisions.
- (iv) Rewards for Distance Teaching are dependent on the academic unit's commitment to distance education.

According to Schuttloffel (1998), like with anything new or different, many people have greeted distance education with skepticism, and in some instances with outright disdain. Some lecturers have viewed distance education as a bothersome task that

must be dealt with on top of everything else, while others have viewed it as merely a new fad that would quickly fade into the background, as had other instructional technology fads. Cummings (1995) says that other lecturers resist distance education as clearly inferior to face-to-face instruction, due to a lack of knowledge about how to deal with the fact that students are not in physical proximity with the instructor. Willis (1993) states that although it appears that things are changing, some lecturers still hold negative attitudes towards distance education.

Eisenburg (1998) says that the concept of faculty flexibility is a particularly significant factor in motivating professors to teach via distance media, particularly with asynchronous forms. On-line learning provides faculty with the same anytime, anywhere experience that makes distance learning attractive to students. This flexibility and reduction in travel allows faculty to spend more time with their families or in personal interests (Inno Visions Canada, 1997) and enables them to be away for research, conferences or personal travel without having to interrupt classes (Lynch and Corry, 1998).

It is also noted that while those lecturers who resist the adoption of distance instruction argue that course quality is compromised, other lecturers are actually drawn into it, in part, because of the unique opportunities it provides. Hardin (1998) says that in certain distance media, such as on-line learning, students who might normally be withdrawn in a traditional class find the non-verbal interaction less intimidating. He also observes that in many cases, instructors in on-line courses find that interaction actually increases because most students including those who do not participate in class are comfortable asking questions and making comments, through e-mail. This is one of the major advantages of distance education over the traditional face-to-face system.

Lombardi (1994) asserts that university education, whether the generic undergraduate curriculum or the most specialized advanced training in scientific analysis, requires little technical sophistication to deliver. He makes a case for universities to use the much taunted "information superhighway" to deal with some of the problems faced by "traditional" education for example, lack of classroom space or equipment, the

increasing cost of tuition, lack of parking space and the regimented schedules of when education can take place. Carter (1996), remarks that universities must have in place a policy statement before starting a distance education outfit which details how to attract and retain lecturers teaching in the interactive system. Carter's suggestion is critical because without a policy framework to operationalize DE, it would be difficult for the lecturers to adopt it. The policy framework provides guidelines on how the system will be operationalized.

According to Gilbert as cited by O'Doughue (2000), the growth in the number of DE students is due to their desire to engage in learning that is flexible. It is then imperative that asynchronous learning is the primary mode by which DE transpires. In a study by Miller and Carr and cited by Copolla, et al. (2000), in a study involving 1862 land-grant, universities identified the following five main training needs: teaching technologies for DE; enhancing interaction in DE; learner-centred teaching techniques; designing instruction for credit courses; models of effective distance teaching. However, the dominant theme in distance education research has been the learner and the organization (Jusri and Seppo, 2000). According to Tella and Kynaslatiti (1998), research has focused primarily upon learner attitudes, and on the other hand upon the salient features that depict the organization that is in charge of the DE course. In general, several studies on teachers attitudes towards DE indicate that lecturers who *teach* at a distance are positive toward distance teaching (Dillon, 1989; Parer, 1988; Johnson and Silvermail, 1990; Mani, 1988; Taylor and White, 1991). It is evident from other reports that teacher attitudes improve as experience with distance education increases, and as instructors become more familiar with technology and logistics of distance teaching (Gilcher and Johnstone, 1989; Kirby and Garrison, 1989). It is also reported that teaching faculty believes that distance students perform as well as or better than traditional students, though the faculty agrees that distance teaching is not appropriate for all content areas (Dillon, 1989; Parer, 1988). However, we should not ignore the fact that academic performance is not the only measure of educational success. There are other issues like socialization, mentorship, role modeling, observation and the copying that student's gain from the education system.

Stinerhart (1988) observed that as the demand for academic courses offered by distance teaching from traditional university campuses grow, there will be a need to increase the number of faculty members required to teach at a distance. This statement holds much water especially to those universities, which have both regular and distance courses like the University of Nairobi. Such universities are faced with a more serious problem in terms of the commitment of the lecturers who are expected to teach both the regular and distance learners at the same time. Neil (1981), observed that such staff who teach both regular and distance learners, are likely to be less than fully committed to distance learning and perhaps retreat into conventional departments when the problem and pressures of distance learning mount. He continues to observe that there is likely to be a considerable number of staff who is implicitly opposed to distance learning with all the stresses and strains that it tends to introduce.

Apparently, there seems to be two schools of thought about the value of distance education. One school sees DE as good and as effective as the traditional classroom environments while the other school of thought feels that DE diminishes the quality of learning. The two schools of thought are opposed to each other and this is the reason why some lecturers resist adopting it.

It is clear that while there is evidence of research studies on attitude of distance learners, very little research has been done on the attitudes of lecturers on distance education. This is a problem in Kenya and particularly in the University of Nairobi where currently there is no such research study that has been conducted on both learners or the lecturer, notwithstanding that distance learning has been in the University since late 1960s. This is a major gap this study hope to bridge. Second, there is no research study conducted to indicate the relationship between the issues of concern to the lecturers and their readiness to adopt DE.

The study sought to find out whether University of Nairobi lecturers are ready to adopt DE as an alternative instructional mode; to assess whether the lecturers are ready to use ICT in teaching; to assess whether the factors that influence lecturers' participation in DE elsewhere in the world are also important to the University of

Nairobi lecturers; to elicit lecturers' attitude towards some specific issues in distance education management at the university of Nairobi ; to propose a strategy to facilitate the management of distance education particularly on the issue of lecturers' participation and adoption of distance education.

A Brief Historical Background of Distance Education

Distance education is currently a global phenomenon with political, economical, social and technological ramifications. Distance Education has grown in leaps and bounds in the last forty years and predictions indicate that it will be the major global industry characterized by global competitiveness (LEONE, 2004). Its history is more than a century old. Institutionalized DE, largely based on correspondence was established in Russia as early as 1850. Later a number of correspondence teaching polytechnic institutes came into existence in the Soviet Union in the 1920s and early 1930s. There are other examples of purpose-built providers of post-secondary distance education courses which include the Toussaint and Langenscheidt Institute in Berlin (established in 1856) and the Swedish Libert Hermonds Institute established in 1898 with over 150,000 students each year at times (Schlosser, 2002). The first tentative step to enroll students in a university programme offered by distance mode was made by the University of London which from 1858 allowed qualified candidates to be admitted for degree studies without the necessity of following a course of instruction at one of its approved colleges.

The first steps to provide correspondence tuition to “external” students was taken up by universities in the USA (for example Illinois State University in 1874; University of Chicago in 1891; University of Queensland in 1911). This was later copied by other institutions for example by the development of correspondence directorates at Indian universities, external studies in Australian and Anglophone African universities, and independent studies at United States universities.

The 1970s decade saw another development in the provision of DE by the establishment of what is currently known as open learning by the British Open University. This was unique in that it brought about what may be referred to as the

second generation of distance education for home-based students based on a combination of correspondence tuition, face-to-face tutorials and the use of broadcast media as well as print, within the framework of a publicly funded institution offering its degrees. Today, we have “mega” Open universities some with hundreds of thousands of students enrolled at a given time like the Indhira Gandhi Open University, the Open University of United Kingdom, University of South Africa, and the African Virtual University which offers courses by Internet (WWW).

For years, correspondence education had a rather negative reputation because dropout rates were often higher than in traditional forms of education. DE faculties in universities were often greeted with considerable skepticism. Research indicates that amongst the factors determining completion or success rates, it is virtually impossible to isolate those which are specifically related to the form of education (distance or campus based), even when similar curricular and assessment procedures are being compared. Learners characteristics (for example, age, motivation, location, and economic level) may differ as may the level of involvement because campus- based students are often studying full-time, while distance learners generally are part-time students. According to Kay and Rumble (1991), while drop-out and repeater rates can be high in both modes, the factors that influence their level are likely to be associated with assessment policies and the quality and extent of student support than the teaching methods per se. A distance learner getting no help from a tutor or other student is more likely to drop out than a student taking an equivalent course at a well-staffed university campus. At the same time, “... a distance learner working with good quality self-study materials, with a tutor and other students available over the telephone and at regular study center meetings, may be less likely to drop out than a student whose sole source of education is attendance at over- crowded lectures” (Kay and Rumble, 1991).

Though distance education has a long history that goes back to the eighteenth century, unfortunately, it has taken more than a hundred years for it to develop into an academic discipline. This can be explained by the general attitude towards DE (distance education) since its inception. This negative attitude seems to be waning (thanks to the advancement in telecommunications which has greatly influenced all

spheres of life including distance education) and that generally DE is getting more and more acceptance even to those originally opposed to it.

Distance Education as a Discipline

Distance education has slowly but surely been evolving into a distinct discipline. For a long time, most of its efforts have been practical or mechanical concentrating much on the logistics of the programmes.

Several DE authorities have been involved in the discourse of whether DE is a distinct discipline or not. Holmberg (1995) says that DE is a distinct form of education. Keegan (1986), concludes that DE is a distinct field of education parallel to and a compliment of conventional education. Shale (1988) disagrees by saying that all of what constitutes the process of education when the teacher and student are able to meet face-to-face also constitutes the process of education when the teacher and the student are physically separated. Peters (1988) asserts that anyone professionally involved in education is compelled to presume the existence of two forms of instruction which are strictly separable: traditional face-to-face teaching based on interpersonal communication and industrial teaching which is based on objectivized, rationalized technologically- produced interaction.

Out of this discourse, Keegan (1988) classifies the theories of DE into three. The first classification is based on the theory of independence and autonomy championed by Charles Wed Meyer as cited by Keegan (1988) who says that the essence of DE is the independence of the student. The theory of independent study championed by Michael Moore (1994) focuses on the learner's autonomy and the distance between the teacher and the learner. The second category is the theory of industrialization of teaching championed by Otto Peters, who sees DE as an industrialized form of teaching and learning. The third category is the theory of communication and interaction was proposed by Borje Holmberg and which says that DE calls for guided didactic conversation. Also associated with this category is the theory of andragogy by Malcolm Knowles (1990), who focuses on how adults learn. This is because for a

long time, distance education has been training adults. A more recent theory is the equivalency theory whose main proponent is Simonson (1999). He states that the more equivalent the learning experience of distant education is to the local student, the more equivalent will be the outcome of the learning experiences (Simonson, 1999).

In some universities, DE has been established as a de facto discipline for research and university study. There are departments in the various universities in the world, which focus on distance education research and development and distance teaching. Such departments have documented their research findings in the field. There is rich scholarly literature currently available and the occurrence of DE as a university taught subject in which courses are offered are indicators of the existence of DE as a discipline.

According to Holmberg (1986), a sensible approach to determine whether a body of knowledge constitutes a discipline would involve making some sort of classification of its research and listing the subject areas included in the curricula for teaching the discipline. Some of the subject areas in distance education include: philosophy and theory; distance students, their milieu, conditions, and study motivation; subject-matter presentation; communication and interaction between students and their supporting organization; administration and organization; economics; systems (comparative distance education, typologies evaluation etc); history of education and others that are bound to emerge with time.

The theoretical foundations on which instructional models are based affect not only the way in which information is communicated to the learner but also the way in which the student makes sense and constructs new knowledge from the information which is presented, (Holmberg, 1986). According to Bredo (1994), there are two opposing views which impact on instructional design: Symbol-processing and situated cognition. However, the dominant school has been the traditional information processing approach which is based on the concept of a computer performing formal operations on symbols (Seaman, 1990). Its key concept is that a teacher can transmit a fixed body of knowledge via an external representation. The teacher represents an

abstract idea as a concrete image and then presents the image to the learner via a medium. The learner then, in turn, perceives, decodes and stores it. Horton (1994) modified the approach by adding two additional factors: the student's context (environment, current situation, and other sensory input) and mind (memories, associations, emotions, inferences and reasoning, curiosity and interests) to the representation. The learner then develops his own image and uses it to construct new knowledge, in context, based on his own prior knowledge and abilities. The alternative approach is based on constructivist principles, in which a learner actively constructs an internal representation of knowledge by interacting with the material to be learned. This is the base for both situated cognition by Streibel (1991) and the problem-based learning by Savery and Duffy (1995).

This school of thought holds that both social and physical interactions enter both the definition of a problem and the construction of its solutions. It also holds that neither the information to be learned, nor its symbolic description is specified outside the process of inquiry and the conclusions that come from that process. Prewart and Floden (1994) state that to implement constructivism in a lesson, one must shift one's focus away from the traditional transmission model to one which is much more complex, interactive and evolving.

The two schools of thought are different in nature but they provide useful insights in understanding DE. This is because in DE a teacher usually starts with empirical knowledge (information processing approach), objects, events and practices which mirror the everyday environment of their designated learners. After having a firm theoretical foundation, the DE teacher develops a presentation which enables learners to construct appropriate new knowledge by interacting with the instruction. This is in agreement with the observation made by Simon (1994) that human beings are at their best when they interact with the real world and draw lessons from the bumps and business they get. According to Perraton (1988), the role of the distance teacher is to facilitate learning rather than communicating a fixed body of information and that the learning process proceeds as knowledge builds among the teacher and the student. Distance education is more influenced by the constructivism school of thought because it gives the learner more autonomy to decide when and how to learn. This led

Beaudion (1990) to observe that the emergence of increasingly student-centered learning activities in the 1970s facilitated by new instructional technology introduced in the 1980s was contributing to a dramatic evolution in teaching staff roles and raises fundamental questions within the professoriate about how it will contribute to the teaching learning process in the 1990s and beyond.

As the discourse ranges on, it is critical that the main aspects of distance education be in-built in the theories. These aspects are: first, the autonomy of the learner in an environment in learning will be facilitated more and more through electronic means. Imperatively, the learner will be the more separated from the teacher physically. The second is the aspect of industrialization of learning. Distance learning thrives through division of labour. Various aspects of distance learning are system- based and they are all systematized like in an industrial plant whereby a specific activity must precede another one for the process to be completed. The globalization of education will force institutions of learning to look at their core business from an entrepreneurial perspective. This means that the issues of efficiency and the attendant competitiveness will be a driving force. Third, assuming that the institutions of learning will have the same curriculum and syllabus for both distance learners and campus based students, the aspect of equivalency comes in. This is because all learners, distance and conventional, will face the same job markets and therefore, the learning outcome of the two instructional delivery systems must be parallel but heading to the same destination.

Definition of Distance Education

Distance education does not have a clear-cut definition agreed upon by its scholars. Several distance education scholars have attempted to offer their definitions of the term. For a very long time, many people have had a negative attitude towards distance education. Tella (1998) says that although distance education has sometimes been called the poor relations system, at its best it is an applied field, borrowing from a variety of theoretical frameworks. Dillon and Walsh (1992) assert that although there is no single universally accepted definition of distance education, most of its theorists

agree that distance education is distinguished from other forms of education by its dependence on some form of mechanical or digital means of communication. This difference implies changes not only in our traditional patterns of communication but also in the way in which we organize the function of education (Dillon and Walsh, 1992).

Generally, distance education can be defined as institution-based formal education where the learning group is separated, and where interactive telecommunication systems are used to connect learners, resources, and the instructor (Kay and Rumble, 1991). This definition underscores four main concepts. First, that DE is institution-based which separates it from self-study. Second, that the teacher and learner are separated by time and space. Third, that there is interactive communication between the learner and the teacher and that the interaction can either be synchronous or asynchronous. Fourth, there is the concept of connecting the learners, resources and instructors, meaning that there are instructors that interact with learners and that resources are available to permit learning to occur (Schlosser and Simonson, 2002). Distance education is a planned and systematic activity which comprises the choice, didactic preparation and presentation of teaching materials as well as the supervision and support of students learning which is achieved by bridging the physical distance between the student and teacher by means of at least one appropriate medium (Schlosser and Simonson, 2002).

Schlosser and Simonson (2002) defined DE by saying that in any distance education process there must be a teacher; one or more students; a course or curriculum that the teacher is capable of teaching and the student trying to learn; and a contract, implicit or explicit between the student and the teacher or the institution employing the teacher, which acknowledges their respective teaching roles.

Keegan (1986) composed a comprehensive distance education definition by identifying its five main elements as:

- (a) The quasi-permanent separation of teacher and learner throughout the length of the learning process (which distinguishes it from conventional face-to-face education).
- (b) The influence of an educational organization both in planning and preparation of learning materials and in the provision of student support services.
- (c) The use of technical media (print, audio, video, or computer) to unite the teacher and the learner and carry the content of the course.
- (d) The provision of two-way communication so that the student may benefit from or even initiate dialogue (which distinguishes it from other uses of technology in education).
- (e) The quasi-permanent absence of the learning groups throughout the length of the learning process so that people are usually taught as individuals and not in groups with the possibility of occasional meetings for both didactic and socialization purposes.

Garrison and Shale (1987) after feeling that Keegan's definition was too narrow and did not correspond to the existing reality as well as to future possibilities, offered three criteria that should characterize the distance education process. The criteria are that:

- (a) Distance Education implies that majority of educational communication between the teacher and students occur non-contiguously.
- (b) Distance Education must involve two-way communication between (among) teacher and student(s) for the purpose of facilitating and supporting the educational process.

- (c) Distance education uses technology to mediate the necessary two-way communication.

As a response to this challenge, Edwards (1995) and as cited by Schlosser and Simonson (2002), says that distance education should be seen as a philosophy of education that provides distance learning opportunities using mass-produced courseware to a mass-market. This definition is a response to the changing educational environment which has been influenced by telecommunication and globalization. The definition takes into account the use of ICT in distance education. The United States Distance Teaching Association (1998), defined distance education as 'the acquisition of knowledge and skills through mediated information and other forms of learning at a distance'

The various definitions underscore the main attributes of any distance education programme and its processes: that there is the physical separation between the learner and teacher in space and time; that communication between the teacher and the learner occurs non-contiguously; that there must be a two-way communication between the learner and the student; and that distance education uses technology to mediate between the learner and the teacher.

ICT in Distance Education

It is apparent in the world today that advances in telecommunication and the related information technologies are going to define the next frontiers in global competition particularly in the education industry. ICT seems to offer exciting and new possibilities for DE delivery that will presumably have a profound impact on educational strategies in both developed and developing countries. A report on a survey conducted by LEONE (2004) in Europe states that University will be near the society and give people skills on how to transform information into practical knowledge. 'The importance of school and university will diminish since more learning can take place at work place with the web-based technology. In the working life training will interface with working periods'.

According to DETYA (2000), higher education institutions continue to make changes in information technologies to improve administration, research, and teaching and learning. At individual level, many teaching staff is just beginning to use ICT in their teaching due to increasing emphasis at a global level on the use of World-Wide Web and communication technologies. DETYA continues to argue that there is evidence, that ICT applications have not penetrated universities and that the level of expertise and practice is not yet sufficient to be considered viable by all academic staff. According to Macchiusi and Trinidad(2000), academic staff are using ICT more for personal use and not for teaching and learning.

According to Rogers (1995), in Innovation Diffusion Model, for significant change to occur, a critical mass of individuals need to have adopted and implemented a given innovation (Green and Gilbert, 1995). This critical mass occurs when enough individuals have adopted the innovation so that the rate of adoption becomes self-sustaining. The process can be slow and in many cases a painful one (Candiotti and Pelliccione, 1998).

Several pedagogical forces also have driven the push to incorporate information and communication technologies, in addition to the “critical mass” factors. These factors are:

1. Information access: The WWW has made it possible for all people to access information. Mastery of this tool has become essential in order to gain access to up-to-date knowledge available electronically.
2. New communication skills: Employers are expecting graduates to be familiar with ICT tools.
3. Asynchronous learning: This allows institutions to break the barriers of time and distance in the provision of education.

Other available literature reveals a variety of other factors that influence the adoption and effective use of ICT at tertiary level by teaching staff that include:

1. Leadership: According to Dolence and Norris (1995), many educational leaders are inexperienced in growth oriented learning opportunities in the information age. For example, Gilbert (1999), found that institutions fail to match the technology investment with adequate training and appropriate incentives.
2. Technology infrastructure and cost: Lack of uniformity in computer hardware and software (Green and Gilbert, 1995).
3. Innovation and change: One of the major factors contributing to the lack of adoption of innovation is not just the attitudes of the teaching staff but also the associated reluctance to change (Fullan, 1995; Candiotti and Clarke, 1998).
4. Resources: Many institutions lack adequate resources which are already stretched to the limits and teaching staff are not only asked to do more but they are expected to do it differently using modern technology (Gilbert, 1996; Northrup and Little, 1996).

According to Intelcom Research Report (2000), it is observable that DE schemes that have until recently relied mainly on the mailing of written materials, videos, cassette recordings, and radio or TV broadcasting techniques can be augmented, enhanced or replaced by new on-line tools and technologies which have the power to transform the learning environment. The report continues to argue that current and ongoing technological developments have the capacity to generate the following benefits particularly in the developing world: First, through internet and the world-wide web, new and enlarged sources of information and knowledge that offer teachers and students opportunities for self-development as well as benefits when applied to the classroom environment. Second, through e-mail and other internet based feedback methods, greater opportunity to reduce the isolation and time- delay associated with DE. Third, through the extraordinary pace of software developments, enriched teaching and learning with enhanced graphics, interaction, animation and

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visualization. Fourth, through lowering telecommunications bandwidth costs, and emergence of enhanced cable, wireless and satellite systems, greater opportunity for basic access, video-conferencing, on-line interactive learning, and live interaction with the central place of distance education programs. Fifth, this will make the benefits of DE eventually available to lower income people and rural communities.

According to the report, the current trends in technological developments indicate that there is a combination of benefits that will improve the cost-effectiveness and make DE an increasingly powerful alternative to the traditional classroom in all countries. It states that a major market is emerging whose focus is distance education and it is believed that this will attract the interest of commercial companies who might increase their level of funding in an anticipation that they will eventually reap from the benefits of the generic demand of other associated products. The Commonwealth Report (Intelcom Research Report, 2000) indicates a major gap between the developed and developing countries in terms of promotion and use of ICT in DE. It appears that it is only South Africa that is currently making serious attempts to bridge the gap between the advanced and the less developed countries in the use of ICT in education. South Africa is getting some substantial assistance from international organizations unlike the other Sub-Saharan African countries and unless the international community comes to the assistance of the other developing world they will be in danger of falling further behind.

The use of ICT in DE depends on five factors, according to the report. These are:

- (a) Geographical size and situation. Countries with large and dispersed populations will find the use of ICT to deliver instruction cost-effective.
- (b) There is a general trend to privatize and liberalize the telecommunication sectors by change of policy by majority of countries on both sides of the digital divide. Telecommunication and Internet are improving quality, lowering costs and accelerating innovation around the world. Education policy is normally associated with raising awareness and providing leadership in educational use of ICTs.

- (c) It is noticeable that small markets attract fewer investors and less competition and offer fewer economies of scale which would lead to price reduction. Regional schemes can overcome this problem, by increasing aggregate market size and hence enable the creation of scale economies. The developing countries must seriously form viable regional groupings that will allow economies of scale and attract investment in telecommunication technologies.
- (d) The issues of per capita income are an important factor to the investing community. The markets need to allow the affordability of the ICT products to attract the commercial investors. Market growth opportunities are also required to attract and sustain the potential investments.
- (e) The developing countries need to address the issues that relate to educational delivery challenges due to geographic or cultural isolation, or appreciation for more systematic challenges such as adapting to the demands of information economy which can only be seriously addressed by ICT. There is need for the governments and particularly the education ministries to evaluate whether their policies encourage the use of ICT technologies for instructional delivery.

According to the Intelcom Research (2000), many developing countries are facing fundamental problems with education delivery in which ICT could come in handy. However, they face a severe challenge of acquiring the required skills and resources to address such opportunities. They also have a major problem of putting into place a policy environment with which they are comfortable and not seen as being dictated upon by international donors.

The developing countries also fear that opening up to new technology increases their dependency on outside support which makes them vulnerable to other donor conditions. Nevertheless they have to open their economies in order to access the

Internet, by allowing private investment in the sector to encourage the development of the telecommunication industry.

The use of ICT in DE in any country is to a large extent dependent on the reach and quality of a country's existing telecommunication infrastructure (i.e., telephone density, cost of access) which can greatly limit the development of DE. Most of the populations in the developing countries live in the rural areas characterized by underdevelopment. It becomes a challenging task to provide for a small number of residents the same depth and range of educational opportunities as in the cities and towns. It is imperative that DE complements local resources and enhance rural development by making education more accessible in a cost-effective way. Unfortunately, rural areas in the developing world are the most neglected in terms of telecommunication, which makes it difficult to use web-based ICT in DE.

There is a need for the governments to generate favourable laws and policies directly regulating Internet because this has an impact on the potential use of ICT in DE. Equally important is the need to have a clear educational policy towards the use of ICT in education generally.

Research studies in developing countries indicate that the more modest ICT projects are the more successful they are, because they are able to attract and secure funding other than issues of sustainability. It is observable that for a donor sponsored ICT project to be successful, the initiative requires the presence of local participation and serious consideration regarding the self-sustainability of the project.

Generally, Africa has lagged behind in the development of ICT in DE. Apart from South Africa, which is implementing several initiatives, most of the other Sub-Saharan African countries are still at the stage of conceptualizing the ICT projects. Several such projects in Africa have been initiated with the majority of them being in South Africa with the exception of the African Virtual University (AVU) whose activities are in fourteen other African countries (i.e., South Africa, Kenya, Uganda, Tanzania, Zimbabwe, Ethiopia, Ghana, Namibia, Benin, Burkina Faso, Burundi, Mauritania, Niger, Rwanda, and Senegal). AVU's objective is to build human

capacity and support economic development by the power of modern telecommunication technology in providing world-class tertiary education and training programmes to students and professionals in Sub-Saharan Africa. AVU uses interactive satellite and computer based technologies to deliver academic, library services and laboratory experiences available simultaneously to a network of sites across Africa. In Kenya, several universities (Egerton University, Kenyatta University,) are such like sites for AVU.

South Africa has two other major ICT initiatives that are operational. The Distance Educational Learning System (DEDLS) and the Technology Enhanced Learning Initiative (TELISA). DEDLS focuses on developing DE content which is independent of the delivery system as long as it is digitally based. The idea is to develop content which is not produced with a specific medium for transmission in mind but which can be transmitted via a range of alternative technologies. TELISA on the other hand, focuses on content and plans a series of internet-based information servers in order to provide appropriate support-material to existing educational institutions. One thing to note about these initiatives is that they aim at broadening the access to specific tertiary education by making ICT access the tool for education delivery and not the main goal.

From a critical analysis of the trends taking place in the world today, there is no doubt that telecommunication will be the principal technology that will drive all industries. In particular, instructional delivery whether the face-to-face or by distance, will increasingly rely on ICT. However, it is unfortunate that the developing countries lag behind in the development of ICT. Their tele-densities are exceedingly and comparatively low. Universities in most of those countries are still using the face-to-face methods of instructional delivery and those with some modest forms of DE are predominantly using the print media. If such universities are to keep pace with international trends and compete favourably with institutions of higher learning that have become global, they must speedily invest time and resources in ICT in education. The national governments of the developing countries must prioritize and invest in the ICT infrastructure and increase tele-density. This will enable educational institutions to increasingly think of going into distance education.

Through the use of ICT in DE, interactivity can be increased in the learning process. According to US Congress, (1988), distance learning allows students' to hear and perhaps see teachers as well as allowing teachers to react to their student's comments and questions. Virtual learning communities can be formed, in which students and researchers throughout the world and who are part of the same class or study group can contact each other any time of the day or night to share observation, information and expertise with one another, (Vander Ven, 1994 and Wolfe, 1994). Therefore, the use of ICT helps to increase interactivity between students and teachers in broader sense. The possibilities of almost unlimited access to information and global communication offered by ICTs give a new dimension to the concepts of open and life-long learning (Omwenga, Waema and Wagacha, 2004). The University of Nairobi has an operational distance education programme which has also incorporated the E-learning model using the WEDUSOFT platform developed by Dr. Elijah Omwenga. The inclusion of the E-learning component will make distance learning in the university more versatile and flexible to the learners and teachers.

Distance Education in Kenya

The history of distance education in Kenya can be traced as far back as 1949 when the Asquith Commission Report on new university challenges in the British colonies recommended the creation of "center for Adult Education in keeping with British traditions." This saw the establishment of the College of Social Studies founded at Kikuyu Campus in 1961 as an independent centre for liberal education.

At the time of independence, a critical issue was the presence of many untrained primary teachers most of whom had only primary level education. By an arrangement with the Ministry of Education, the University of Nairobi through the College of Education and External Studies, about 3000 primary school teachers received two-year high school education by distance learning mode between 1967 and 1980. Between 1967 and 1982 over three thousand adult education untrained teachers were trained by distance mode by the University of Nairobi's Institute of Adult Studies. The main instructional mode was through the print media and evening radio classes.

From 1986, the University of Nairobi launched degree level distance learning programmes in education (Bachelor of Education-Art degree) which by the year 2003 had 2500 students. In 2003, a Bachelor of Education (science) was launched with an enrolment of 80 students. A Post-Graduate Diploma course in Sexually Transmitted Infections (STI) offered by the Faculty of External Studies and the Faculty of Medicine was launched in 1999 to train medical doctors by distance mode. The Faculty of External Studies also has a Post –Graduate Diploma in Education programme offered by distance mode.

It is also important to appreciate that there have been other DE initiatives in Kenya by other institutions. Several examples are given here below:

- (a) The African Virtual University which is a World Bank sponsored programme offering university courses mainly from USA universities, using electronic means.
- (b) The Ministry of Agriculture has developed distance education programs for farmers and extension workers mainly through booklets supported by radio broadcast. The programmes are going on.
- (c) The African Medical Research Foundation (AMREF) and the Ministry of Health train the health personnel through distance education
- (d) Kenya Institute of Special Education launched DE program to train teachers in special and regular schools in 2002.
- (e) Several public and private universities have started DE programmes mainly using the print media.
- (f) Several international universities, for example, University of South Africa (UNISA). have entered into collaborative arrangements with local higher education institutions to offer education by distance.

It is observable that distance education is not well developed in Kenya. Even in the University of Nairobi, where it was pioneered, it is not yet mainstreamed. More critical is that there is no national policy to guide the implementation and practice of distance education in Kenya. Up to the time of compiling this report, the University of Nairobi has no clear policy on distance education.

1.2 Statement of the Problem

Generally there has been slowness to adopt DE instructional delivery mode at the University of Nairobi. The Syagga Report (2001) on “Distance Education Strategic Plan in the University of Nairobi” says that learning/teaching practices in the University of Nairobi have a strong and enduring tradition whose approaches are understandably very largely influenced by the campus-based education system. The report notes that the changing learning environment and new trends remain an alien entity far removed from education systems and methods that continue to apply traditional teacher-centred approaches and methods. The situation has so far changed since then. Though distance education was established in the university in late 1960s, only four out of 46 academic programmes are offered by the print based distance education mode. The Open-learning project funded by the Belgium government has helped in the development of E-Learning content for over twenty courses in different faculties in the university. More than one hundred and fifty lecturers have been trained in E-Learning content development. An attempt by the Faculty of External Studies to offer a Bachelor of Business Administration (BBA) course through the distance mode was met with resistance at a senate meeting in August, 1999. Some senators openly asked how courses, particularly of applied sciences, could be offered by distance mode and yet be considered of good quality. The issues ignited a healthy debate in the university which culminated in a top level retreat meeting, in March, 2003, with DE experts from within the East African region, the meeting resolved that the University of Nairobi needs to start distance learning courses in all disciplines and each faculty was to decide when to translate their course materials to DE modes. However, some lectures are still skeptical about the viability of distance education instructional modes. It is apparent that the lecturers’ attitude

towards the adoption of DE instructional delivery modes especially in faculties that do not have DE programmes can be said to be generally negative.

This was also evident in the Faculty of Science Bachelor of Education distance programme in which some lecturers reportedly told students that the study units used for teaching in distance learning are not of good quality. Some lecturers, it has been reported, have openly questioned the quality and viability of distance learning for physical science programmes. It was also reported that a lecturer openly refused to accept to use a study unit (course unit) to instruct Bachelor of Education (science) distance learning students. This is a clear indication that there is a problem of readiness to adopt distance learning in the University of Nairobi. The problem is aggravated by the fact that the university has a dual mode of instructional delivery (the face-to-face or the so called the regular mode and the distance mode). It is also worth noting that there is no clear policy to guide distance education in the university.

At present, there is no single academic programme that is on offer through any form of E-learning. Some initiatives to develop E-learning content have been on since April 2004. However out of the first 35 lecturers selected to participate in an E-learning content development, only nine lecturers had developed the content by October 2004. It is apparent that only 25% of the first group turned out for a follow-up training (Open learning project report of 4th October 2004). The current University of Nairobi strategic plan (2005-2010) has stated that Open and Distance learning and E-learning is a major instructional delivery mode to be adopted but a major concern is resistance to adopt them by the lecturers.

In March 2003, the University of Nairobi Senate decided to launch a university-wide distance learning campaign which will see all programmes offered by distance methods and particularly using the modern ICT methods of DE instruction. This initiative is a response to the need to reach students who demand university level education within Kenya, the East African region and eventually globally.

Currently the University of Nairobi has an on-going web-based (E-Learning) pilot programme in which fifteen lecturers from various university departments have been

inducted and trained on translating their course materials into E-learning modes. It is expected that through the Open-Learning Project, funded through the Belgium-Kenya Cooperation Programme, over a hundred lecturers will have been in E-learning mode by the year 2007. The trained lecturers are expected to act as ICT change agents in their respective faculties and departments.

Before the launching of the university-wide DE programs, it is critical for the University of Nairobi to study the attitudes the lecturers have towards the use of ICT in distance learning and their readiness to translate their course content into distance education ICT mode. Establishing the lecturer's attitude and how the attitudes may affect their adoption of ICT in DE is paramount to the successful implementation of the Open and Distance Learning initiative in the University of Nairobi. This study aims at establishing the factors that influence the lecturer's attitudes towards DE and how their attitudes influence their readiness to translate their course materials into distance education ICT instructional delivery modes.

Several studies conducted in different environments, at different times have generally agreed on the main factors that influence instructors' attitude towards the adoption of ICT in DE (Almeda,2000; Anderson,1998; American Federation of Teachers ,2002; Betts,1998; Daugherty et al.,1998; Dooley and Murphy,2001; Haywood,2000; Jones et al.,2000; Lee,2001; Mackenzie,2000; Mackenzie, et al,2000; Pajo and Wallace ,2001; Plewes,2002; Rockwell et al.,1999; Jones,2002; Schiffer,2002). The main inhibiting factors identified by the studies are: Increased time commitments (workload) for academic staff; lack of extrinsic incentives or rewards; lack of strategic planning and vision; lack of support (in training in technological development and pedagogical aspects of development) and philosophical, epistemological and social objections; decreased face-to face interactions with students; lack of support from the administrators; time spent in learning new technologies; lack of equipment; lack of technical support in DE; reduced course quality; negative attitudes towards DE by colleagues; issues of intellectual property rights; lack of time to plan and deliver a course by distance methods. The main motivating factors cited in the studies are: stipends; decreased workload; release time; use of new technology; increased course quality; improved teaching skills after DE training; self-satisfaction; training in DE;

administrative assistance. These are the factors this study adopted as the ones that would influence instructors' attitude towards the adoption of ICT in DE in the University of Nairobi.

1.3 Purpose of the Study

The intent of this study is to investigate the factors that influence University of Nairobi lecturers' attitudes and their readiness to adopt distance education.

1.4 Research Objectives

The following are the research objectives of the study:

1. To establish whether the factors influencing lecturers' participation in distance education in other institutions of higher learning in the world are also important to the University of Nairobi lecturers.
2. To establish the attitudes the lecturers' hold towards the adoption of DE in the University of Nairobi.
3. To establish whether lecturers' attitudes towards DE differ according to the university colleges.
4. To establish the relationship between the lecturers' readiness to adopt DE and: training in DE; access to the use of ICT; formulation of an ODL policy; the support lecturers get from the administrators; formulation of a clear intellectual property rights policy; the efforts the lecturers must put in DE; time commitment required to translate teaching materials into DE formats and incentives provided to the lecturers by the university.
5. To establish whether readiness to adopt DE differ according to the university colleges.

6. To establish whether there is a relationship between the lecturers' attitude and readiness to adopt DE.
7. To establish whether lecturers support the use of ICT (E-learning) in distance education.
8. To develop a path analysis model showing how various variable in the study influence lecturers' readiness to adopt distance education.
9. To propose an intervention strategy to facilitate the rate of adoption of DE at UoN.

1.5 Research Questions

1. Are the factors that influence lecturers' participation in DE in other institutions of higher learning also important to the University of Nairobi lecturers?
2. What are the university of Nairobi lecturers' attitudes towards the adoption of distance education?
3. Does the lecturers' attitude towards DE influence their readiness to adopt DE?
4. Is there any difference, between the UoN colleges, on the importance they attach to the factors they consider important for them to participate in DE?
5. Does training in distance education influence the lecturers' readiness to adopt DE?
6. Are the University of Nairobi lecturers ready to adopt DE?
7. Do the attitudes to use ICT (E-learning) in DE differ according to the University of Nairobi colleges?
8. Does readiness to adopt ICT in DE in the University of Nairobi differ according to the university's various colleges?
9. Does access to the use of ICT have any relationship to readiness to adopt DE by the lecturers?

10. Does the availability of a computer to the lecturers in the University of Nairobi influence their readiness to adopt DE?
11. Do the University of Nairobi lecturers support the use of E-learning in DE?

1.6 Research Hypotheses

1. The University of Nairobi lecturers' attitude towards DE is negative (not supportive).
2. The lecturers' attitude towards DE does not differ according to University of Nairobi colleges (disciplines)
3. There is no difference in the mean score of the University of Nairobi colleges on the issue of whether they would encourage their colleagues to use E-learning in DE.
4. Factors influencing lecturers' participation in DE in other institutions of higher learning are not important to University of Nairobi lecturers.
5. There is no significant mean difference in the factors that influence lecturers' participation in DE between the colleges.
6. There is no significant difference in the readiness to adopt DE mean score between the University of Nairobi colleges.

1.7 Scope of the Study

The study was restricted to the factors that influence instructors' participation in DE, the lecturers' attitudes towards the use of ICT in DE instructional delivery modes and their readiness to adopt the use of ICT in distance education in the University of Nairobi. The University of Nairobi Senate has the ultimate authority to make academic decisions. It comprises the top university administrators, the deans,

directors of institutes and schools, chairmen of departments, and student representatives. At any time, the lecturer will be involved in decision making at the departmental meetings or implementing the decisions already made by the University Senate. Decisions are normally made using up-down approach and down-up approach. According to Lindgust (1974), lecturers who may have little knowledge about a proposal, say on a DE programme, are called to make decisions on it. This is particularly so in University Senate where members are expected to deliberate on issues which are technical and can be better understood by professionals in a specific field.

1.8 Significance of the Study

Out of this study, the University of Nairobi administrators will be in a position to develop a strategy of dealing with lecturers' attitudes and readiness to adopt distance education and the use of ICT in teaching. In particular it will enable the university to understand the relationship between the lecturers' attitudes towards DE in its various disciplines(colleges) and their readiness to adopt ICT as the university embarks on a university-wide ODL programme (that is "MODULE III", as it is currently being referred to in the University of Nairobi). The study will enable the University to develop a distance training programme that will facilitate the adoption of distance education. Also, the University management will have some understanding of the main issues they need to focus on to enable the lecturers to participate in distance education activities. Without the understanding of lecturers' attitude, the implementation of DE would be difficult because the lecturers are the major stakeholders and their role in it is critical to its successful implementation. The study results can be used by other local and regional universities in implementing ODL in their institutions, because they share relatively the same educational environment. The study will also be a foundation of other future research studies on matters to do with lecturers' participation in distance education.

1.9 Assumptions of the Study

The study assumed that:

- (i). DE is a viable educational delivery method and that lecturers are aware of and will honestly report their views about DE.
- (ii). People's behaviour is a function of how they interpret situations and units in a society (Blumer, 1969).
- (iii). That the survey respondents candidly respond to the various items of the survey.
- (iv). Going with the University of Nairobi traditions, instructors have the academic freedom to support or not to support an issue or project.
- (v). Lecturers' beliefs are effective in inducing curricula change (McLaughlin, 1990) and represent a clear "guiding stick" in the planning procedures for distance education (Tobin, Tippin and Gallard, 1994).

1.10 Limitations of the Study

The limitations of the study were:

- (i). That the study was confined to the University of Nairobi and therefore results can only be generalized to cover other distance education institutions in Kenya.
- (ii). Many lecturers were not well versed with the operations of distance education.

- (iii). That the University of Nairobi has part-time lecturers who were difficult to interview because they are spread in the various Extra Mural Centers.
- (iv). The questionnaire return rate from the College of Agriculture and Veterinary Sciences was poor and were not forthcoming even after visiting the respondents' offices severally.

1.11 Delimitations of the Study

1. The sampling was done such that it would be representative to the Population.
2. Concepts and terms were clarified to the respondents.
3. Explanations were given to the respondents where need arose
4. Questionnaires were delivered to Extra-Mural Centers when the courses were in session.

1.12 Conceptual Framework/ Theoretical Framework

The conceptual framework is guided by seven variables, two independent, one dependent and four moderating variables.

1.12. I Independent Variables:

(a) *Factors influencing lecturers' attitude towards distance education (knowledge stage In Rogers (1995 Model).*

Research studies conducted in other institutions of higher learning in the world as indicated in the theoretical framework section, have come up with the factors that either motivate or inhibit lecturers from participating in DE. The main inhibiting factors identified by the studies are increased time commitments (workload) for

academic staff; lack of extrinsic incentives or rewards; lack of strategic planning and vision; lack of support (in training in technological development and pedagogical aspects of development) and philosophical, epistemological and social objections; decreased face-to face interactions with students; lack of support from the administrators; time spent in learning new technologies; lack of equipments; lack of technical support in DE; reduced course quality; negative attitudes towards DE by colleagues; issues of intellectual property rights; lack of time to plan and deliver a course by distance methods. The main motivating factors cited in the studies are: stipends; decreased workload; release time; use of new technology; increased course quality; improved teaching skills after DE training; self-satisfaction; training in DE; administrative assistance. These are the factors this study will adopt as the ones that would influence instructors' attitude towards the adoption of ICT in DE in the University of Nairobi.

(b) Attitudes Towards Distance Education

Several authors have defined the term attitude. Johannes (2000) says that attitude can be regarded as continuously varying traits, that is, predispositions to display certain behavior with respect to the attitude object. Burrs, as cited in Hogg and Vaughan (1995) says that attitude is a mental state of readiness, organized through experiences, exerting an influence upon an individual's response to an object and the situation with which it is related. Kotler (2001) defines an attitude as a person's favorable or unfavourable evaluations, feelings, and tendencies towards an object or idea. From the above definitions, it is clear that an attitude is usually viewed as an enduring disposition to consistently respond in a given manner to various aspects of the world including persons, events, and objects.

Attitudes put people into a frame of mind of liking or disliking things, of moving towards or away from them. Hence it is difficult to change attitudes. This is because a person's attitude fits into a pattern, and to change one attitude may require difficult adjustments in many others.

There are three components of an attitude: cognitive, affective and behavioural. The cognitive component represents a person's awareness of and knowledge about an object. The affective component reflects an individual's general feelings or emotions towards an attitude object. The behavioural component refers to intentions and behavioural expectations. According to Rosenberg (Cognitive Balance Theory, 1958), attitudes have influence on how people behave. It means that the attitude an individual has determines his behavior towards any stimuli.

The attitude a lecturer has towards DE will influence his/her acceptance or rejection of it as a viable mode of instructional delivery. It will also influence their level of preparedness to adopt the use of ICT used in delivering distance learning courses.

Attitudes are complex and difficult to measure. Several researchers have formulated theories of attitude and attitude change. Consistency theories postulate that humans are striving for consistency and that they want to be internally consistent. In order to stay consistent and maintain homeostasis, people change their attitude (Suedfield, 1971). The main proponents of consistency theories are, Osgood and Tannen (congruity Theory, 1960; Festinger (Cognitive Dissonance Theory, 1957), Heider (Balance Theory, 1944); Cartwright and Harary (Structural Balance Theory, 1956). The theories are centred on learning and cognition. They emphasize that attitudes have adaptive significance to the people who hold them (Suedfield, 1971). Proponents of this line of thought are, Doob (Learning Theory, 1947), Hovland (Incentive Theory, 1953), Bem (Self-Persuasion Theory, 1965) and Beer and Croke (Task-Experience Theory, 1965).

Functional theorists feel that attitudes serve a useful purpose and when it is no longer useful, a new one will be adopted (Suedfield, 1971). They feel that a man struggles for goals and will adjust attitude to meet those goals. This serves as an ego-defensive function because it helps protect one's self-respect. This line of inquiry is championed by Katz (Motivational- Construct Theory, 1954); Kelman (Functional Analysis Theory, 1962). Jans and Man. (Conflict Theory, 1962), Horland. Jans, and Kelly (Reinforcement Theory). Following Suedfield (1971) argument it is then possible for lecturers to change their attitudes towards the adoption of DE and the use of ICT in

teaching. This will enable them to maintain homeostasis with the current trends in instructional delivery.

Cognitive and perceptual theories focus on discrepancies between attitudes of communication. Attitude of Behaviorist theories are more focused on the adaptive aspects of attitude. They are based on generalization or analogies. The main proponents are Leonardo Doob (Attitude as implicit response, 1947); Bem (Skinnerian, Radical Behaviorism, 1965).

What is critical in this study is how attitudes can be represented and measured. McGuire (1985) says that attitudes are regarded as theoretical constructs that relate (overt) stimuli to (overt) behaviour and thus make the prediction of behaviour more parsimonious just like any other personality trait. Anderson (1993) says that attitude is a person's evaluation of the attitude object and if it is assumed to be stable over time it must be stored in memory over time. He postulates that attitudes can be represented by means of semantic networks.

According to Wilson, et al., (1989), there is a difference between cognition-based and affect-based attitudes. Affect-based attitudes are associated with a strong affective reaction to the object and are easily accessible and automatically activated through mere exposure to the attitude object or its name. Edwards (1990), and Edwards and Von Hippel (1995) say that affect-based attitudes can hardly change or established because they are not based on cognitive reasons. In contrast, cognitive-based attitudes are as a result of controlled cognitive processes rather than automatic processes. They consist of a set of evaluative beliefs concerning an attitude object rather than an affective reaction.

For one to understand and measure attitude, it is important to understand how attitudes can be represented. Several models have been proposed. Fazio (1986 and 1989), developed the Evaluative Nodes in Semantic Memory Model whose core assumption is that nodes representing attitude objects in a semantic memory are connected to a node representing an evaluation (good versus bad) and this association is termed "attitude".

Since the association between an attitude object and its evaluation is considered to vary in strength, the model transforms Converse (1970), distinction between attitude and non- attitude into a continuum. The stronger the association between attitude object and evaluation in the long-term memory, the more can be spoken of an attitude that influences behavior and can be measured. Attitude activation is conceptualized as an automatic process whereby, for a strong attitude, the mere exposure to the attitude object (or its name) is sufficient to activate the attitude. It is then my conclusion that this model is more suitable for representing affect-based attitudes.

According to Tourangeau's (1987, 1992) model of Attitude as Memory Structures organized by means of topicality, attitudes are regarded as complex memory structures which comprise of beliefs, feelings, personal experiences stored in memory and images related to the attitude issue. Attitude representation is organized according to topical aspects. That is, memory contents belonging to an attitude issue are more strongly associated with each other if they fall into the same or at least into related topical cluster than if they belong to an unrelated cluster.

Pratkanis (1989), also developed the Bipolar versus Unipolar attitude structures which is primarily concerned with the question of how evaluative beliefs related to an attitude issue are organized in memory. The defining feature of the unipolar attitude structure is that a person holds either a negative or positive belief concerning an issue but rarely both of them. Inter-individuality variability in the evaluation of an attitude object normally occurs only between neutrality and either the positive or the negative extremes of the attitude continuum. In the bipolar attitude structures, knowledge about both sides of an issue is characteristic. An individual can produce arguments supporting their own position as well as opposing arguments. According to Judd and Kulik (1980) a bipolar attitude can play the role of a schema that facilitates processing of attitude-congruent and attitude -incongruent information. They continue to say that with respect to the cognition-based-affect-based distinction, unipolar attitude may be cognition-based attitudes as well as affect-based attitudes whereas attitudes structured in a bipolar manner are mainly cognitive-based.

Tourangeaus model appears to be more applicable to this study. This is because if an attitude can be regarded as cognition-based and as organized according to the topical structures of attitude-relevant knowledge, it is reasonable to take these topical clusters into account by constructing different attitude scales for distinct clusters. Distance learning is currently a major topical issue particularly in the University of Nairobi and hence Tourangeaus model is quite relevant in this study.

Measuring attitudes and their relationships to behaviour is a complex and subtle business, (Glick and Fiske, 1996). This study is concerned with lecturers' attitudes towards the adoption of ICT in distance education. The measurement methods and scales are hence critical to the study. The basic assumption of attitude measurements, according to Hogg and Vaughan (1995), are that a person's attitude can be measured by asking questions about thoughts, feelings, and likely actions towards the attitude object. Second, that attitudes can be measured by quantitative techniques (i.e., each person's opinion can be represented by a numerical score). Third, that a particular test item or other behavior indicating an attitude has the same meaning for all respondents so that a given response is scored identically for everyone making it. Fourth, that in a typical questionnaire, respondents are asked to indicate whether they agree or disagree with each of a series of belief statements about an attitude object. Fifth, those attitudes are arranged along an evaluative continuum ranging from favorable to unfavorable. This study used a six Likert scale to measure the lecturers' attitudes towards distance education.

There are several attitude measurement scales. Thurstone scales(reference) involves initially constructing an item pool which has a large amount of statements of opinions about an issue from which a group of judges select a limited number of items to be presented to the respondents. With the Likert scales (refernce), instead of judges, the respondents place themselves on an attitude continuum. A person's score can be summed and the resulting total used as an index of that person's attitude. A researcher can tell a good item (i.e. one that measures an underlying attitude) from a bad one (one that does not) by correlating each item with the total. Semantic Differential scales developed by Osgood et. al., (1957), focuses on the meaning people give to a word or subject. It assumes that words have two meanings; the semantic or dictionary

meaning and the connotative (meaning a word suggests apart from the thing it explicitly denotes or names). Hypothetically, there is semantic space of an unknown number of dimensions in which the meaning of any word or concept can be represented at a particular point. According to Moscovice (1983), our reaction to events or responses to stimuli are related to a given definition common to all the members of the community in which we belong. Augustinus (1991), says that if social representations are cognitive structures shared on a group basis, agreement between members of that group should increase with age.

It is coming out clearly that the attitude the lecturers hold is critical to the successful implementation of DE. Various studies have indicated that attitudes depends on the level of motivation or de-motivation of the lecturers: the level of familiarity with DE; experience with DE; familiarity with the specific DE project at hand or being implemented and its logistics; the level of the lecturers' involvement. There is a positive link between lecturers' attitude towards DE and their adoption of it. Apparently, lecturers concerns and needs about DE or on-line courses are universal, irrespective of discipline, type of institution or geographical location (Carol, 1998). Therefore, a lecturer can be regarded as supportive (positive), opposed (negative) or having divided support (lukewarm) towards an aspect of distance education, in this case towards the adoption of distance education as a viable instructional mode and also the use of ICT in teaching.

(c) Prior Knowledge In DE:

Readiness to adopt distance education is also influenced by the prior knowledge a lecturer has in it. O' Malley (1999) says that the prior knowledge or the level of familiarity lecturers have in distance education enhances its adoption. Lecturers may have in some way participated or heard about distance education. Their experience in the process of getting the prior knowledge influenced the attitude they hold towards it. If the experience was in some way unpleasant it is presumed that they would hold a negative attitude. If the experience was pleasant in some way, then it is presumed that it would lead to a positive attitude towards distance education. If the experience was neither pleasant nor unpleasant, perhaps because of lack of enough information then the lecturer will presumably hold a neutral attitude.

(d) Access to the use of ICT in Distance Education.

The gap between the teacher and the learner is bridged by some form of ICT. The instructional materials are transmitted to the learner through the various forms of media i.e. print, electronic, and e-learning. Therefore, a lecturer's knowledge of ICT and particularly its use in DE can facilitate their readiness to adopt distance education.

According to Rogers (1995), in Innovation Diffusion Model, for a significant change to occur, a critical mass of individuals need to have adopted and implemented a given innovation. Green and Gilbert (1995) say that a critical mass occurs when enough individuals have adopted the innovation so that the rate of adoption becomes self-sustaining. The process can be a slow and in many cases a painful one (Candiotti and Pelliccione, 1998).

Rogers says that there are five categories of adopters for any innovation.

- (i). Innovators: people who are willing to experience the innovation (only 2.5% of the lecturers).
- (ii). Early adopters: they are risk takers and enter after the course has been charted (about 13% of the faculty).
- (iii). Early majority: for whom the trial has been blazed and charted (34% of the lecturers).
- (iv). Late majority: they normally take fewer risks (34 % of the lecturers).
- (v). Die- hards or laggards: they normally come into the picture when they have no alternative or perhaps they simply retire from teaching (16.5% of the lecturers).

It is assumed that lecturers and even colleges will also follow the same pattern when it comes to the adoption of the use of ICT in teaching. There will be the innovators among them who will take the initiative immediately. For example, the College of Physical and Biological Sciences and the College of Education and External Studies were the first to engage in the use of e-Learning in the university. The other colleges

are yet to be engaged. However, not all the lecturers in the two colleges adopted the e-learning. There are those who feel that Kenya is not yet ripe for such grandiose projects. Perhaps we should also ask ourselves a why it has taken the other colleges (other than CEES) in the University of Nairobi over thirty years to adopt DE). It is now that all other universities have decided to use distance education as a delivery mode that the other colleges have woken up to the challenge. This perhaps gives credence to Rogers theory that some people will only adopt an innovation after having the confidence that it works from observing those who adopted it earlier than them. Does it mean that majority of the University of Nairobi lecturers are in the late majority category? Does it also mean that the University of Nairobi as an institution behaves like the late majority group? This is an area of study that should be explored further.

1.12.2 Dependent Variable: Readiness to Adopt DE

The theoretical backbone of readiness to adopt an innovation stems from Roger's (1995), Innovation Decision Process Theory, Moore(1999), Model of Adoption of Innovation and Louks-Horsley(1996), Concern-Based Adoption Model (CBAM). The three are the models that explain the dynamics that influence the adoption of an innovation.

Lecturers' readiness to adopt DE agrees well with Rogers (1995), Innovation-Diffusion Theory, decision, implementation and confirmation stages. Rogers defined "innovation" as an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 1995, P.11). "Diffusion", on the other hand, is the process by which an innovation is communicated through certain channels over time among members of a social system. The "innovation-diffusion" is the process through which an individual (or other decision- making unit) passes from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision (Rogers,1995,p.20) .

Rogers (1995) says that a number of factors interact to influence the diffusion of the innovation. The factors are: the innovation itself, how the information about the innovation is communicated, time, the nature of the social systems into which the innovation is being introduced, and prior conditions of the adopters. According to Rogers, (1995), there are five main attributes that affect the rate of adoption:

- (i). Relative advantage: the degree to which an innovation is perceived as being better than the idea it supersedes. In many distance learning institutions, the administrators may use incentives to increase the rate of adoption, whose main function is to increase the degree of relative advantage of distance education mode of delivery over the traditional face to face mode.
- (ii). Compatibility: the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters.
- (iii). Complexity: the degree to which an innovation is perceived as relatively difficult to understand and use. The rate of adoption is slower with more complex innovations.
- (iv). Trial -ability: the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on installment plan are generally adopted more rapidly than innovations that are not divisible.
- (v). Observability: the degree to which the results of an innovation are visible to others.

According to Rogers (1995), the diffusion of the innovation occurs over time and can be seen as having five distinct stages: knowledge; persuasion; decision; implementation and confirmation. The theory says that the adopters of an innovation must learn about the innovation, be persuaded as to the merits of the innovation, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation.

It is important to note that the theory has three major components: individual innovativeness; the rate of adoption; the perceived attributes. Individual innovativeness theory states that individuals who are predisposed to being innovative will adopt an innovation earlier than those who are less disposed.

The rate of adoption theory states that innovations are diffused overtime in a pattern that resembles an S-shaped curve. It theorizes that an innovation goes through a period of slow, gradual growth before experiencing a period of relatively dramatic and rapid growth which finally becomes almost stationary. The theory of perceived attributes states that potential adopters judge an innovation based on their perception in regard to five attributes of the innovation: trialability, observability, relative advantage, complexity and compatibility. It holds that an innovation will experience an increased rate of diffusion if potential adopters perceive that the innovation:

- (a) can be tried on limited bases before adoption,
- (b) offer observable results,
- (c) has an advantage relative to other innovations (or the status quo),
- (d) is not overly complex,
- (e) is compatible with existing practices and values.

After its conception, an innovation spreads slowly first, usually through the work of "change agent", who actively promotes it, then it picks up speed as many more people adopt it and eventually everyone who has the potential of adopting it.

Take-off point is critical to the process. This occurs when the forward-thinking change agents have adopted the innovation and have communicated it to others in the society by whatever means they believe appropriate. Rogers states that when the number of adopters reaches a critical 5%-15%, the process is probably irreversible.

According to Rogers (1995), the individuals within a social system do not adopt an innovation at the same time. Rather they adopt it in an over-time sequence, so that individuals can be classified into adopter categories on the basis on which they first begin using the idea. So that in the diffusion process there is the innovator (2.5%),

early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%). Therefore, in the process of adopting DE and the use of ICT in teaching an individual lecturer, a college or the university as an institution will be in one category of the adopters at a given time. What is important is to identify the stage and then establish its characteristic and consequently the strategic options for promoting the adoption of the innovation.

Omwenga (2003), in his PhD study on e-learning environments, applied Rogers model to describe the stages for the deployment of e-learning institutions and found the model useful in describing how learners adopt new learning technologies and specifically e-learning. He found that learners follow the same pattern while learning through e-learning. The table below was extracted from his research study.

Table1.1: Omwenga’s modification of Rogers’s model [source: Omwenga, E. (2003), *Modeling and analyzing a computer-mediated learning infrastructure*]

Rogers Aspect	How Research Model takes care
Advantage to current practice	Identify the benefits involved
Trailability	Evaluation of current status : establish channels of communication; Training
Observability	Involvement of staff: Avoidance of the “Not invented here” Syndrome: pioneers to train others.
Complexity	Fitting curriculum onto technology and vice-versa; Training staff
Compatibility with current practices	Work plan; implementation options

Deutschman (1961) conducted a research study on whether the diffusion of agricultural innovations is adopted in the same pattern in both developed and developing countries. The findings seemed to display striking similarities in Ohio in the USA and Saucio in South America. The diffusion process seemed to portray the same general pattern of human behaviour.

On the other hand, Moore (1999), Model of Adoption of Innovation was a modification of Rogers (1995) Innovation Diffusion Model. Moore introduced a marketing perspective to it. He modified the technology adoption Life cycle to include what he referred to as “cracks in the ball curve”, located between each of the psychographic adopter categories. In his model, Moore suggests that due to their unique characteristics, each of these groups of potential adopters will need different reasons to make the adoption decision and this will necessitate different marketing strategies for each group. He proposes that there is an opportunity for the adoption of an innovation to loose momentum at each point when a new group of adopters needs to come on board. This happens particularly in the transition between early adopters and the early majority groups. He referred to this as the “*Dividing Chasm*” because of the fundamental differences in the two psychographic groups. He observes that the early adopters are inclined to view innovation as an opportunity for a dramatic change (or even a revolution) in their industry or field. On the other hand, the early majority is not interested in revolutionary approaches and seeks evolutionary ways of improving productivity of their operations. Moore continues to argue that unlike the early adopters who are prepared to pay the price of being first and gaining competitive advantage, putting up with bugs and glitches, the early majority want innovation to “work properly and to integrate appropriately with their existing technological base”. The early majority are pragmatics who need to see reliable reference base to make the adoption decision. Therefore, unless new marketing strategies are identified to make an innovation attractive to the early majority, it may never complete the adoption cycle. It will level after the first two groups of adopters and forever remain on the fringes of the mainstream practice.

This model has very important insights into how the university can enhance the adoption of DE and use of ICT in teaching. It is very important for institutions to see themselves as enterprises that can only survive by focusing on satisfying the needs and wants of their customers. It is equally important for the institutions and in this case the University of Nairobi to realize that it has two categories of customers: the external (students, clients, etc.) and the internal (lecturers and the other employees). Therefore, a marketing approach should be employed to enable majority of the

lecturers to adopt DE and use ICT in teaching. This can only be achieved by establishing the concerns the lecturers have as they adopt DE. This is the reason why the study focuses on establishing the main issues of concern to the lectures (chapter 5 pages 146 of this thesis).

According to Schiffan (1991), the theory of diffusion is potentially valuable to the field of instructional technology for three reasons. First, most instructional technologists do not understand why their products are not adopted. Second, instructional technology is an inherently innovation-based discipline. Many of the products produced by instructional technologists represent radical innovation in the form, organization, sequence and delivery of instruction. An instructional technologist who understands the innovation process and theories of innovation diffusion will be more fully prepared to work effectively with clients and potential adopters. Third, the study of diffusion theory could lead to the development of a systematic, prescriptive model of adoption and diffusion.

The theories are critical to this study because they clearly explains how an innovation spreads from its source to its adopters. The decision by a lecturer to incorporate new instructional delivery modes in DE involves a change from the conventional (traditional) classroom instruction to asynchronous modes. The diffusion theory helps to explain the process through which the lecturers adopt new teaching (pedagogical/andragogical) skills and new instructional delivery modes. Of particular importance is to understand the stage the lecturers are at a specific point in time in the adoption process. This will enable the university administrators to design, develop and implement projects that will facilitate and enhance the adoption of distance education.

Rogers's model (1995) would be effective if it is combined with the general change management theories in addition to educational change theories. The main change management theory is founded on three schools of thought: the individual perspective school; the group dynamic school; the open systems school.

The individual perspective school has two camps: the behaviorist and the Gestalt field psychologists. The behaviorist camp sees individual's behavior as resulting from his or her interaction with the environment and hence all behaviour is learnt. The individual is seen as a passive recipient of external objective data. The proponents hold that human action is conditioned by their expected consequences. The main proponents of this line of thought are Pavlov (1927) and Skinner (1974) who says that in order to change behavior it is necessary to change conditions of what causes it. Therefore, behaviour modification involves the manipulation of reinforcing stimuli so as to reward desired activity. On the other hand Gestalt-field psychologists believe that individual's behaviour is the product of environment and reason. They believe that for organizational change to occur individual members must change their understanding of themselves and the situation in question which in turn leads to changes in behaviour (Smith et al., 1982).

The group dynamic school asserts that people in organizations work in groups' and individual behaviour must be seen in the light of groups prevailing practices and norms. The main proponent was Lewin (1947a) who argued that an individual's behaviour is a function of the group environment or "field" and that in order to bring change the focus must be at the group level and should concentrate on influencing and changing group norms, roles, and values (Cunning and Husse, 1989; Smith et al., 1982).

The open system school sees organizations as composed of a number of interconnected sub-systems. It follows that any change to one part of the system will have an impact on the other parts and in turn on the overall performance (Scotts, 1987). Accordingly any change approach will require change in norms, rewards systems, and work structures must be approached from an organizational level rather than individual or group level. However, Beach (1990:138) criticized the theory by saying that it does not comprise a consistent, articulated, coherent theory and much of it is abstraction because it does not offer any concrete and operational usage. However, the proponents of the open theory did not explicitly state how organizations change. Do they change spontaneously or some foreign forces magically come in and make the organization see the need for change? It is my view that in many cases

organizational change is initiated by strong-willed individuals who have a vision and they sell it to others most probably the close workmates who then push it through the various layers in an organization.

This study is more persuaded to take the group dynamic line of thought. This is because for the University of Nairobi's lecturers to adopt instructional delivery mode it is important to target the group level for instance faculty levels who in turn will influence other faculties to adopt the new instructional delivery modes for learning. The University of Nairobi like most of Kenya's public universities is governed through the committee system. Every decision must have the blessing of either the operational unit (the department, faculty, college or senate). Academic programmes are discipline based. In many cases courses cut across several disciplines. Therefore, to increase the rate of adoption of DE in the university, faculties should be the point of entry. Most probably when one faculty is successful in offering their courses by distance delivery modes, other faculties in the mother college will be motivated and borrow a leaf and follow suit. This will enhance the rate of adoption of distance education in the university.

11.12.2.1 Measurements of the dependent variable

The independent variable was measured using the data collected and analyzed from the Lecturers attitude towards DE. The following constructs were used to measure the independent variable:

- access to the use of ICT in teaching,
- training in DE,
- formulation of an ODL policy,
- support from the administration,
- incentives provided to the lecturers participating in DE,
- lack of intellectual property rights instrument
- efforts the lecturers expect to put in while translating course materials into DE formats and
- time commitment while participating in DE.

The following are the propositions that will be made:

1. If attitude towards DE is positive (supportive) and the knowledge in the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE have positive coefficients (betas), the level of readiness should be high even though the other variables [lack of an intellectual property rights policy, efforts the lecturers are expected to put in while translating their course materials into DE formats, time commitment while participating in DE], are negative.
2. If attitude towards DE is positive (supportive) and the access to the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE have negative coefficients (betas), the level of readiness will be considered very low and hostile even though the other variables (lack of an intellectual property rights policy, efforts the lecturers are expected to put in while translating their course materials into DE formats, time commitment while participating in DE), are positive.
3. If attitude towards DE is positive (supportive) and one of the following independent variables: the knowledge in the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE have a negative coefficients (betas), the level of readiness will be considered to be low even though the other variables (lack of an intellectual property rights policy, efforts the lecturers are expected to put in while translating their course materials into DE formats, time commitment while participating in DE), are positive .
4. If attitude towards DE is negative (supportive) and one of the following independent variables: the knowledge in the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE have a negative coefficients (betas), the level of readiness will be considered to be very low even though the other variables (lack of an intellectual property rights policy, efforts the lecturers are expected to put in

while translating their course materials into DE formats, time commitment while participating in DE), are positive.

5. If attitude towards DE is negative (supportive) and one of the following independent variables: the knowledge in the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE has positive coefficients (betas), the level of readiness can be deemed to be low even though the other variables (lack of an intellectual property rights policy, efforts the lecturers are expected to put in while translating their course materials into DE formats, time commitment while participating in DE), are positive.

Intervening Variables

There are four factors that will also influence a lecturer's attitude towards distance education. These factors play a moderating role in attitude towards distance education.

These factors are:

- (i) *The role of the change agent: University Administrators (The University Top Management, the Dean of Faculty, Chairman of the Department).*

After its conception an innovation spreads slowly first, usually through the work of "change agent", who actively promotes it then picks up speed as more and more people adopt it and eventually everyone who has the potential of adopting it. Take-off point is key to the adoption process. This occurs when the forward-thinking change agents have adopted the innovation and have communicated it to others in the society by whatever means they believe appropriate. Rogers (1995) states that when the number of adopters reaches a critical 5%-15% the process is probably irreversible.

Increased innovativeness is the main objective of the change agent. Social economics and individual personality characteristics define the individual's role in the diffusion process. Diffusion research findings indicate that early adopters were more likely to

be literate, had more years of formal education, higher social status, and greater degree of upward social mobility than the late adopters, hence concluding that an individual's social-economic status and innovativeness were closely related. Early adopters seemed to have personality traits showing greater empathy, less dogmatic, had greater rationality and intelligence, greater ability to deal with abstractions, were more intuitive, less fatalistic, displayed a more favourable attitude towards change and science, were better at coping with risk and uncertainty, and had higher educational and occupational aspirations than the late adopters. In terms of communication behaviour, early adopters have more social participation, have more interconnection through personal networks, more cosmopolite, and greater exposure to media, actively seek information about innovation, and have a high degree of opinion leadership than late adopters.

(ii) *Perceived characteristics of the DE project*

The projects level of viability, feasibility, technological orientation and conformance to the lecturer's DE technological skill.

(iii) *Characteristics of the actual DE project*

That is how easy or difficult it is to understand and use it, the required time commitment, facilities and equipment required and the accruable benefits, Rogers(1999).

(iv). *Lecturer's overall concerns and needs*

At each stage or point in the adoption process the Lecturers' needs and concerns should be addressed. The conceptual frame work also borrows from the Louks-Horsley (1996), Concern-Based Adoption Model (CBAM), a model for change in individual which has implications for the practices of professional development. It acknowledges that learning brings change and supporting people in change is critical for learning to "take hold". The main tenets of this model are that individuals have concerns and needs that must be addressed before accepting to change. This model applies to anyone experiencing change, that is, policy-makers, teachers, parents, students (Hall & Hord, 1987; Loukes-Horsley & Stiegelbauer, 1991). This is because

as lecturers prepare to start offering their courses by distance modes, they have concerns that need to be addressed. This is an area that is greatly ignored because most organizations will focus on the interests of students while grossly ignoring the lecturers' needs. Universities need to start “internal marketing” so that as they come up with strategies of wooing more students they also think on how they woo and retain competent lecturers who are motivated to venture in the new and novel instructional delivery modes.

The model (and other developmental models of its type) holds that people considering and experiencing change evolve in the kinds of questions they ask and their use of whatever the change is. In general, early questions are more self- oriented: what is it? And how will it affect me? When these questions are resolved, questions emerge that are more task-oriented: How do I do it? How can I use the materials efficiently? How can I organize myself? And why is it taking so much time? Finally, when self- and task concerns are largely resolved, the individual can focus on impact. Educators ask: Is this change working for students? And is there something that will work even better?

Table.1.2: Typical Expression of Concern about an innovation

	<i>Stages of concern</i>	<i>Expression of concern</i>
6.	Refocusing	I have some ideas about something that would work even better.
5.	Collaboration	How can I relate what I am doing to what others are doing?
4.	Consequences	How is my use affecting learners? How can I refine it to have more impact?
3.	Management	I seem to be spending all my time getting materials ready.
2.	Personal	How will using it affect me?
1.	Informational	I would like to know more about it.
0.	Awareness	I am not concerned about it.

Table1.3: Levels of Use of the Innovation Typical Behaviuor.

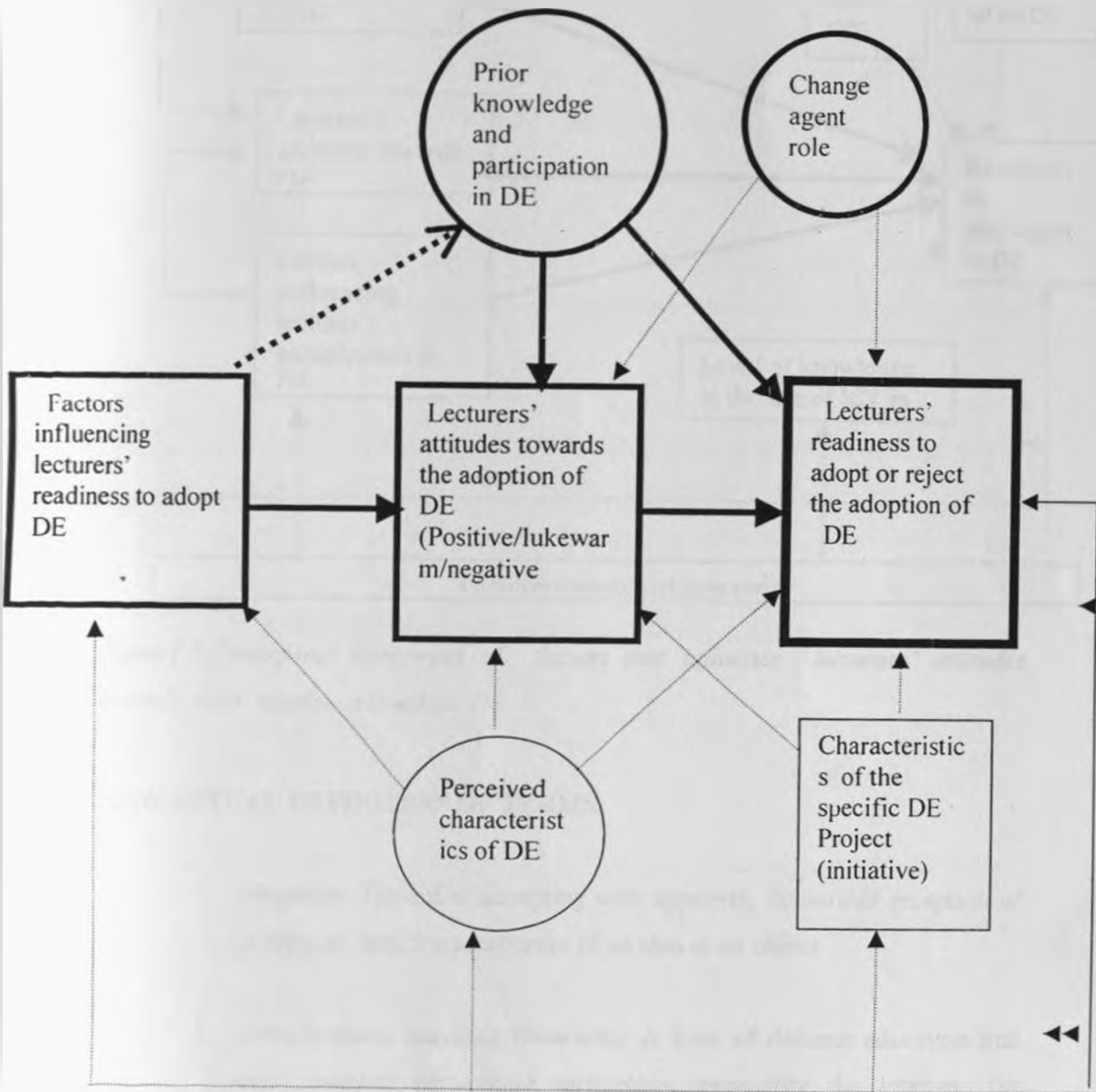
	Levels of Use	Behaviour Indicators of Level
VI.	Renewal	The user is seeking more effective alternatives to the established use of the innovation.
V.	Integration	The user is making deliberate efforts to coordinate with others in using the innovation.
IVB.	Refinement	The user is making changes to increase outcomes
IVA.	Routine	The user is making few or no changes and has an established pattern of use.
III.	Mechanical	The user is making changes to better organize use of the innovation.
II.	Preparation	The user is taking definite plans to begin using the innovation.
I.	Orientation	The user is taking the initiative to learn more about the innovation.
0.	Non- Use	The user has no interest, is taking no action.

The conceptual Model of the study

The conceptual model for this study is diagrammatically shown in figure 1.1 below. It borrows heavily form Rogers (1995) Diffusion of Innovation Model and O'Malley et al., (1996), Concern Based Adoption Model (CBAM) and Moore's' (1999), Adoption of Innovation Model. It premises that in order to facilitate the readiness to adopt DE, the university should first establish the factors that would influence their participation; second, that it is critical to establish the current attitudes the lecturers have. The current lecturers' attitudes will be influenced by: the prior knowledge the lecturers have in DE; the training they have in DE; the actual characteristics of the DE project; the perceived characteristics of DE; the role of change agent (University

administrators). It is also important to establish the concerns and needs of the lecturers in the DE adoption process. The adoption of DE is a linear process and that readiness to adopt DE is related to the factors influencing attitudes and the actual attitude the lecturers hold towards DE. The coefficients relating the dependent variable and the independent variables should indicate the type of relationships that currently exist between them and the strength of the relationships. Inverse (negative relationship) of the variables indicates that the current situation needs to be addressed. The strength of the inverse indicates the variance in the relationships between the variables. A positive relationship indicates congruence between readiness to adopt DE and the variable and that the relationship should be enhanced. However, the strength should also indicate the degree of congruence. The analysis of these relationships between the variables will be the inputs of the intervention strategy. Out of the analysis of the variables, the university will be able to develop an intervention strategy that will facilitate the speedy adoption of DE.

(a)



Lecturer's concerns and needs

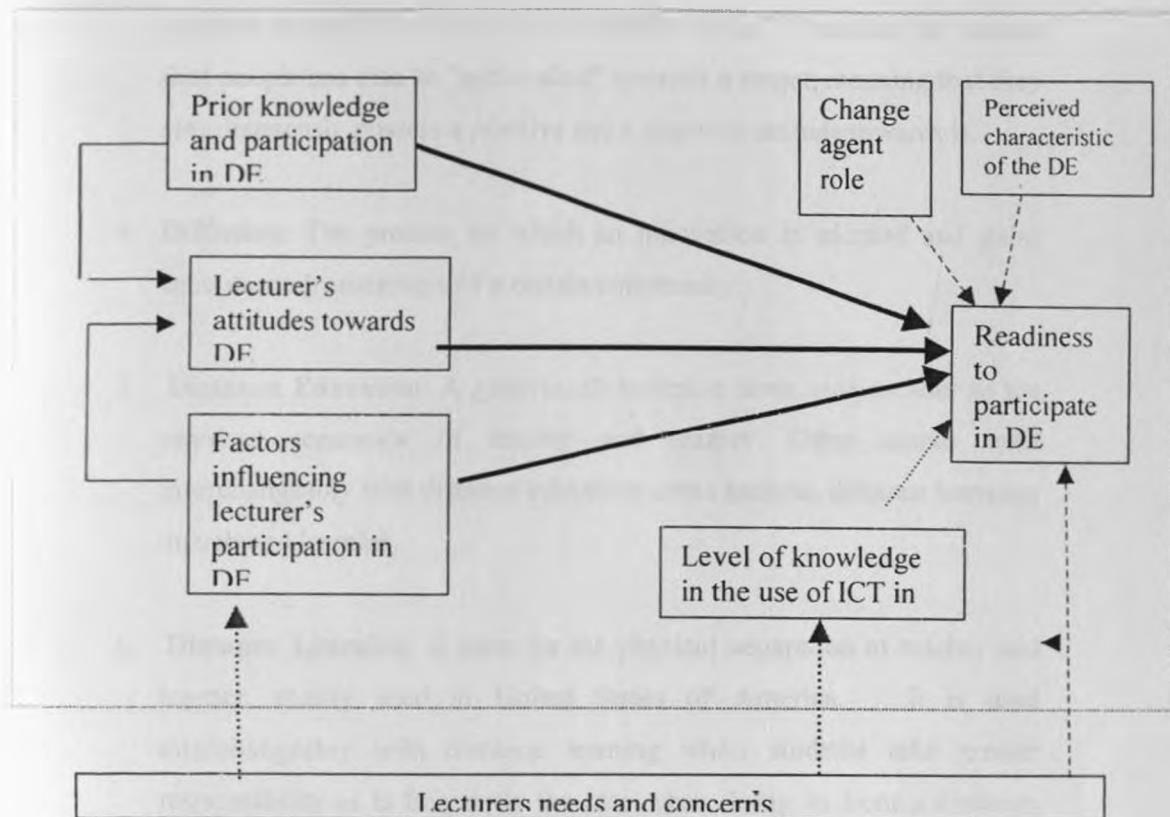


Figure1.1:Conceptual framework of factors that influence lecturers' attitudes towards their readiness to adopt DE

CONCEPTUAL DEFINITION OF TERMS

1. **Adoption:** The act of accepting with approval; favourable reception of an idea, or item; the acceptance of an idea or an object
2. **Asynchronous learning Networks:** A form of distance education that uses complete networking technology, especially the Internet, for instructional activities.
3. **Attitude:** An individual's disposition to consistently respond in a given manner to various aspects of the world including people, events and objects. An attitude is a complex mental state involving beliefs and feelings and values and dispositions to act in certain ways. Attitudes are

positive or negative views of an “attitude object”. Research has shown that people can also be “ambivalent” towards a target; meaning that they simultaneously possess a positive and a negative attitude towards it.

4. **Diffusion:** The process by which an innovation is adopted and gains acceptance by members of a certain community
5. **Distance Education:** A generic, all-inclusive term used to refer to the physical separation of teacher and learner. Other names used interchangeably with distance education terms include, distance learning; distributed learning.
6. **Distance Learning:** A term for the physical separation of teacher and learner, mostly used in United States of America. It is used interchangeably with distance learning when students take greater responsibility as is frequently the case when doing so from a distance. The desired outcome of distance education is distance learning.
7. **Innovation:** An idea, practice, or object that is perceived as new by an individual.
8. **Readiness:** The state of having been made ready or prepared for use or action; willingness to do something or act in a given way; being temporarily ready to respond in a particular way.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature presented in this chapter was captured mainly from primary but also from secondary sources. The literature search was conducted using a variety of means. Electronic search was the main method which involved a search through internet search engines such as Yahoo and Google. Data bases like ERIC (Educational Resources Information Centre), AERA (American Educational Research Association), and ECER (Exceptional Child Education Resources) were a major source of literature review.

The main technique was to get key words through the internet search engines. The search engines provided all possible articles related to the search key words and their data bases. Normally, the articles would be arranged in their order of relevance and importance. Library search particularly from the Free University of Brussels and the University of Nairobi provided excellent secondary sources of information.

The University of Nairobi has embarked on a programme to offer her courses to students through the distance learning modes of instructional delivery. This is a great idea bearing in mind the global educational changes for educational institutions to offer courses by distance education using the latest ICT instructional delivery technologies. Before such a grandiose venture is undertaken, it is crucial to ensure that all critical stakeholders are fully in support of it. Unfortunately, many change initiatives are launched without this cardinal consideration which results in their failure because they do not have the blessings and support of most important stakeholders. Currently, there is no study on lecturers' attitudes towards distance education and specifically ICT that has ever been conducted in the University of Nairobi. This is the very purpose of this research study. As earlier indicated in the problem statement, the University of Nairobi lecturers have generally not accepted the

viability and effectiveness of distance education as an educational philosophy which can be used to educate people using various ICT delivery modes.

The main research questions directing this research study are: whether the factors that influences lecturers' participation in DE in other institutions of higher learning also important to the University of Nairobi lecturers? What are the university of Nairobi lecturers' attitudes towards the adoption of distance education? Does the lecturers' attitude towards DE influence their readiness to adopt DE? Is there any difference, between the UoN colleges, on the importance they attach to the factors they consider important for them to participate in DE? Does training in distance education influence the lecturers' readiness to adopt DE? Are the University of Nairobi lecturers ready to adopt DE? Do the attitudes to use ICT (E-learning) in DE differ according to the University of Nairobi colleges? Does readiness to adopt ICT in DE in the University of Nairobi differ according to the university's various colleges? Does access to the use of ICT have any relationship to readiness to adopt DE by the lecturers? Does the availability of a computer to the lecturers in the University of Nairobi influence their readiness to adopt DE? Do the University of Nairobi lecturers support the use of E-learning in DE?

2.2 Factors Influencing Lecturers Participation in Distance Education

Readiness of lecturers, which is the most important element in any kind of education system, should not be taken for granted since the success or the failure of any education approach depends on them. This observation also led Rowe (1985:2) to say, "every education system must deal with three fundamental elements: the people, the methods, the plans. At the very top of this list, I have placed the teacher because they are the key to all methods of education".

According to Devries and Seppo (2000), the role of the faculty member in a distance education setting is an area which has been largely ignored in the past. Distance education (DE) as well as distance learning (DL) and distance teaching (DT), requires new skills and attitudes different from those required in a "traditional" classroom. Since many educators are unfamiliar with this innovative educational settings,

training on both the technical aspects of the system and the strategies for teaching students at a distance would benefit both teachers and students.

University administrators also need to change their views towards distance education. Dillon and Walsh (1992) commented that the view of distance education as an innovation provides an important means for understanding the phenomena of distance education, particularly from the perspectives of those upon whom its acceptance depends: the faculty. According to a study by Edooley (2000), how people perceive and react to the technologies is far more important than the technical obstacles in influencing its implementation and use. Unfortunately, Edooley does not explicitly state how he measured faculty perception and hence fails to clearly substantiate his statement. This position is emphasized by Moore, (1994) as cited by Keast, (1997), who says that the major obstacles associated with the acceptance or adoption of distance education technologies are, organizational change, change in faculty roles and change in administrative structures. While I concur with the author, his study fell short of looking at how lecturers' attitude would affect their rate of adoption of distance education. The study focuses more on the structural issues of an organization while ignoring the human part of it. Unfortunately, fewer studies have been conducted on faculty attitudes towards their participation in DE. The University of Nairobi has not conducted such a study though she has over thirty years of distance education experience.

Dillon and Walsh (1992) noted that faculty attitudes concerning participation in DE are oftenly neglected in the research. Edooley (2000) could not agree more, by stating that fewer studies consider the perceptions of administrators and support staff and that as programmes are implemented, it is important to determine a broader array of perceptions, concerns, and interests regarding distance education technologies. This understanding, according to Edooley, can facilitate the diffusion and adoption of DE technologies throughout the institution to enhance student learning while maintaining employees (administrators, faculty, and support staff) engagement and satisfaction.

In his case study of how the perceptions of administrators, faculty, and support units impact the rate of DE adoption Edooley (2000), concludes that the three groups

indicated a general consensus on factors that either motivate or inhibit the groups from adopting DE. The study was focused on selected Oklahoma colleges and universities. The study used the qualitative approach and snowball sampling technique. The results indicated three major areas that required consideration if adoption of DE is to be enhanced are: First the administrative support which should include providing a seamless infrastructure and virtual presence for distance learners (student/technical support). Second, training of faculty not only on technology exposure but also on instructional design. Third, incentives to staff such as release time, mini-grants, continuing education, stipends and recognition in the promotion and tenure process. This will enhance faculty verbal encouragement to continue or begin, using distance education technologies. Edooley (2000) advises universities to revise their policies that are primarily focused on research agendas and establish the institutional capacity to support the development of DE courses or programmes if the universities are to utilize ICT technologies effectively.

Schiffer's (2002) study on faculty participation found out that the percentage of faculty within each age range participating and not participating in distance education did not deviate significantly from the group percentages (participator=14.1%, non-participators=85.9%). No relationship was found between age and level of faculty participation in distance education. At the same time, there was no relationship found between faculty position and level of faculty participation in distance education. The percentage of tenured and non-tenured participating and not participating in DE did not deviate significantly from the group percentages (participators=14.2%, non-participators = 85.8%). There was no relationship found between tenure status and level of faculty participation in DE. Responses from females were significantly different from those from males, specifically on issues related to intrinsic motives. The males had a higher percentage relative to the females. The study did not give the possible reasons as to why there was a difference between female and male lecturers on the intrinsic motives.

A critical look at those studies reveals that they focused on the developed country institutions, which have very different environments from the developing countries. In particular, the developing countries have very low levels of tele-density and their

resource base is relatively less endowed. The applicability of their studies hence needs to be validated in such environments. This is an area this current study aims to achieve. Also apparent is the fact that the studies have predominantly focused on e-learning mode of distance education. Perhaps one would wonder whether the same factors would hold in other modes of distance learning particularly the print, which is still and might be more effective in the developing world whose telecommunication infrastructure is still wanting. Yet another area the studies have not addressed is the process of adoption and in particular, how the factors affect the lecturers attitude and consequently how attitudes affect the adoption rate. They ignored to measure the magnitudes of the cause –effect relationships of attitudes and rate of adoption. The studies did not clearly indicate how readiness to adopt DE was related to the specific areas of concerns to the lecturers. This study (in chapter 8) has clearly analyzed the relationship between the main issues that concern lecturers’ readiness to adopt DE .

2.3 Lecturers’ Attitude Towards Distance Education

The attitude the stakeholders have on a distance learning course is critical to its success. In particular, the attitudes of the lecturers, the students, the administrators, the course designers hold towards DE, have a significant impact on the quality of the distance learning programme. However, the dominant theme in distance education research has been the learner and the organization (Jusri and Seppo, 2000). According to Stella and Kynaslatiti (1998), research has focused primarily upon learner attitudes, and on the other hand upon the salient features that depict the organization that is in charge of the DE course. In general, several studies on teachers’ attitudes towards DE indicate that lecturers who teach at a distance are positive toward distance teaching (Dillon,1989;Parer,1988; Johnson and Silvernail,1990; Mani,1988;Taylor and White,1991). It is evident from other reports that teachers attitudes improve as experience with distance education increases, and as instructors become more familiar with technology and logistics of distance teaching (Gilcher and Johnstone,1989;Kirby and Garrison,1989). It is also reported that teaching faculty believe that distance students perform as well as or better than traditional students, though the faculty agrees that distance teaching is not appropriate for all content areas (Dillon, 1989; Parer, 1988).

Research studies by Clark, Soliman and Sungaila (1985) indicate that senior faculty and professors find distance teaching both more enjoyable and more demanding than faculty in the lower ranks. On the other hand, Taylor and White (1991) found educators to be positive towards distance learning. However, their study also indicated that teaching faculty prefers traditional face-to-face instruction citing the quality of interaction and satisfaction gained from the act of teaching in a traditional setting. Scriven (1986), found that majority of instructors believe that distance teaching is as important as traditional teaching but that 25% of the faculty would avoid teaching distance students if they could.

A study by Clay (1999), on faculty attitudes towards DE at the State University of West Georgia found a significant difference between those who had taught in DE courses and those who had not. Forty-five percent of the respondents reported a positive attitude towards DE. It also reported a relationship between the number of years of teaching and attitude towards DE. Fifty- four percent (54%) of those with 5 or less years of teaching experience reported a positive attitude towards DE compared to only 26% of those with 5 or more years of teaching experience. Those with tenure (40%) appeared to be less accepting of DE as those without (51%). One tenured professor with more than 20 years of teaching at the university commented, *No form of 'Incentive' ... Would motivate me to participate in distance education. I think better serve our students by developing learning by enhancing relationship with them and among them through face-to-face dialogue and interaction.*

A survey conducted by Lee (2002), on the perception between faculty members and administrators, revealed that they differed when it came to instructional support. Without the support, it would be difficult to retain the lecturers. A better understanding of instructional support and the environment in which it occurs creates a more reliable base from which to support distance education lecturers in making a successful teaching experience (Lee, 2002). The attitude the administrators hold towards ICT use in DE will directly affect the attitude of the faculty and filter down to the students. It is critical that the administrators believe in DE in its totality. Also important is to recognize that having the right attitude alone will not assure the

effective implementation of DE programme. It is important that issues of harmonizing the structures, strategy, and culture of the organization be high in the agenda. Such issues are beyond the scope of this study. However, at the end everything must be harmonized together beginning with administrator then the student and the faculty at the middle.

A study by Nazer (2000) to investigate the attitudes of school teachers and directors towards the worth and value of distance education in Lebanon revealed a difference in the attitude of the two groups. School directors were negative about the possibility of distance education meeting the training needs of school teachers and that training needs and the purchase of required technologies would be prohibitive. Teachers on the other hand were positive and reported their willingness to familiarize themselves with the specifics of DE. It came out clearly that there was need to organize workshops and technology seminars so that schools can better understand the structure of curricular and pedagogical practices needed for full blown educational programmes in Lebanon.

It is apparent that lecturers are resistant to adopt new educational technologies. Cravener (1999) says that no instructional design is hardy enough to withstand the detrimental effects of content experts faculty who cannot, and will not, communicate effectively with their geographically dispersed students. She continues to say that even when given a chance for training, in technology, faculty is rarely interested in new technologies to support teaching and learning. The faculty is predominantly focused on psychological factors such as: personal affective issues and requirements for tenure (Cravener, 1998; Rickards, 1999). They conclude that this so because the lecturers are already successful teachers and researchers and feel relatively no need to make dramatic changes in their career. The authors also noted that subject-experts have minimal incentives to alter their current practices-to add to their workload-by learning new high-tech skills. It is noted that few institutions of higher learning reward the use of technologies or even distance learning with tenure or promotion awards. In addition, both social status issues and affective responses to technology (anxiety, fear, conflict related to cognitive dissonance) inhibit faculty members from participating in ICT training and from implementing the technologies after training.

Two types of resistance were noted by Cravener's (1999) case study. First, several senior faculty members declined to participate in technology training because of lack of self-confidence. This is what Sherry (1998), cited as common among faculty who lack experience with new technology and would prefer to avoid public learning risks. For this group, Sherry suggests a longer trail of the training programme, which might permit the development of improved trust levels. The second resistance area indicated was on both systems and affective issues. It was noted among faculty whose roles in the department were most familiar to the training provider. High similarity of social status combined with disparity in technology use skills, probably aroused anxiety and cognitive dissonance related to interpersonal competence comparisons (Cravener, 1999). According to the results of the case study, though approximately 10% of the faculty had similar positions as the trainer, only 5% of logged faculty consultations time for the training was with the persons in high-similarity interpersonal comparison group. It was noted that 95% of logged training consultation hours were utilized by 42% of faculty in low-similarity interpersonal comparison group (tenured faculty whose rank exceeded that of the trainer) or faculty who taught in separate course groups. The study, however, does not examine why the lecturers were not logging in. The study would have shed light on how to deal with such situations in order to enhance adoption.

In a research study by Akihito and Beverly (2000) whose purpose was to investigate faculty perception of distance learning course, their training and type of compensation for participation in distance learning and factors influencing their satisfaction, found that provision of computer equipment was an incentive which significantly correlated with willingness to teach another distance learning course ($r = .169, p < .05$). Personal interest in technology was the only motivator to correlate significantly with willingness to teach another distance learning course ($r = .251, p < .01$). In the same study, there was a significant correlation between the agreement that distance learning courses are more time consuming to develop than traditional courses and willingness to teach another distance learning course ($r = .177, p < .05$). Most of the faculty found the distance learning experience to be positive, would teach another distance learning course, and would recommend it to their colleagues. The study indicates that

incentives were not especially effective in influencing their perception of or willingness to engage in distance learning efforts. Intrinsic motivations were a stronger influence on faculty satisfaction and continuing interest in and support of distance learning initiatives.

The attitude towards the adoption of DE differed according to various variables. This seems to indicate that if the variables are manipulated either positively or negatively they would have an influence in the attitudes towards DE. This implies that the establishment of the lecturers' attitude towards the adoption of DE is critical in strategizing on the enhancement of its adoption.

2.4 Lecturers' Readiness to Adopt DE

Lecturers' readiness to adopt new instructional delivery technologies has received some good attention from DE researchers. A study by Hapiza and Yasofd (2003), found that 63% of respondents had a high level of IT usage, but no relationship between age, level of education and length of service. Lyod and Gressard (1986) and Dupange and Krendal (19992) found that positive attitude towards computer is correlated with the level of its usage even though they do not express such positive attitude. Hapiza and Yasofd (2003) study found out that readiness to adopt DE was closely associated with involvement in DE. The same was concluded in the study by Hall and Loukes (1979) who also found that the understanding of DE by lecturers was high though their knowledge of E- learning was low. Kirby and Garrison (1989), concluded that lecturers exposure to DE helps them to acquire positive attitude towards it. Clark (1993) says that lecturers are ready to embark on E-DL provided that they have the knowledge about it. Black (1992 a) concluded that the understanding of DE by lecturers could contribute to their readiness to implement DE programmes.

Hapiza and Yasofd (2003), Clark (1993), Heath (1996), Betts (1998), Rockwell et al. (1998) and Lilard(1985), concluded that there is a relationship between the level of lecturers' knowledge in DE with their readiness to adopt it. The studies also discovered that lecturers are confident and interested in DE but they are rather

skeptical about its effectiveness. In particular, the lecturers indicated that DE is not suitable to all courses, that DE should be combined with face-to-face methods of teaching. The lecturers' main concern was that they had minimum control over the students.

In a study by Pajo and Wallace (2001) the attitudinal barrier factor was the only factor that accounted for a significant portion of the variance in enjoyment ($\beta = -.46$, $p < .000$), perceived usefulness ($\beta = -.21$, $p < .05$), and future intentions to adopt web-based technology ($\beta = -.37$, $p < .000$). The significant negative betas indicate that participants who scored higher on the attitudinal barrier factor were less likely to find web-based technology enjoyable, useful, or intend to use it in the future. Overall, barriers accounted for 22%, 12%, and 21% of the variance in enjoyment, usefulness, and intentions to use respectively. Interestingly, the organizational barrier factor did not contribute significantly to the prediction of any of the outcome measures.

Another study by Wilson (2001), on higher education faculty members from Kentucky State, revealed that faculty ranked online instruction as the least effective mode of instruction of all modes available. In yet another study by N.E.A. (2000), attitudes towards DE were more favourable among those who had taught in DL courses than those who had not. A total 72% of faculty who had taught DL was positive and 51% negative for those who had not taught. The report also indicated that 53% of distance learning lecturers spent more hours per week preparing and developing DE learning courses than preparing and delivering traditional courses. In the same report, lecturers evaluated distance learning primarily on quality of education considerations and they felt that they did more work for the same amount of pay and that they were not fairly compensated for their intellectual property. They indicated that quality of education declined with distance learning. This is why perhaps Marshal and Marshal (2003), asserted that the continuous learning curve of advancements in the telecommunications software and computer hardware industries continues to baffle even the most technically inclined not to mention the non-tech population of faculty members in higher education today.

A study by State University of West Georgia conducted by Parker (2003) indicated a significant difference in attitude among those who had taught and those who had not taught in DE courses leading to the conclusion that experience breeds acceptance. In the open –ended section of the questionnaire, the respondents gave the following reasons regarding their changes in attitude: increased familiarity, positive experience of other faculty, improved training and facilities, increased institutional support, positive feedback from student, positive evaluation by trainers and enjoyment of the flexible hours. The reasons of the negative attitude were: poor performance of technology, negative student feedback, large classes, and negative experiences of other faculty and lack of departmental interest.

Several theories have attempted to explain why it has been difficult for universities to lure lecturers to distance education. O'Quinn and Corry (2002) have listed several factors related to lecturers concerns about teaching in distance education. Some of the factors include, lack of monetary support, increase in work load, lack of salary increase, lack of technological background, lack of administrative support, and concern about the quality of students who enroll in distance courses. Another theory by Arbaugh (2001) attributed the problem to the distance between the instructor and the student. He studied the immediacy behaviour of the instructor to determine student's satisfaction in ODL. This behaviour attempts to reduce the social distance between the instructor and the student. The results indicate that attitudes towards the medium and its variables were positively linked to overall satisfaction. Instructors experience was a less factor. Arbaugh and Martkovich (2001) also agree that the main factors influencing satisfaction levels are the delivery modes and the collaborating aspects. However, it is apparent that the two studies did not address the issue of lecturer's attitude towards the quality of the DE programme.

The O' Quinn and Carry's (2001) study lists several factors that can result in a negative attitude towards ODL. The study concludes that if the instructor can lessen the distance between student and the instructor, the student satisfaction will be higher. Unfortunately, the study is addressing behaviour after the instructor has agreed to teach the particular course suggesting that O'Quinn and Carry's list of factors was not a determinant for the instructor. Both studies do not address the behaviour that leads

to the list of inhibitors. It is important to consider the original attitudes towards DE. Arbough (2001) says that the fact that instructors' online experience was not a predictor of learning, it is easy to also suggest that not only are immediacy behavior more directly transferable from traditional classroom proactive to web-based courses than first thought but they may be even critical than technological acumen in predicting success in online courses.

According to Lori (2003), live interaction that exists in a classroom where non-verbal interactions cannot be measured instantaneously, the capturing of the attention of all students at the same time, the ability to answer students' questions immediately and without delay, are some of the challenges for seasoned traditional faculty members who thrive in a classroom environment. O'Quinn and Carry (2002) agree that there are extreme differences in modality and that faculty has to adapt a new way of teaching and communicating with students, but this does not mean that the new way of teaching and communicating cannot be just as dynamic as a traditional classroom.

Several studies quoted earlier in this thesis indicate that many lecturers have reservations about the loss of interactivity in distance learning programmes. However, Twiggs (2005) says that assessment of both the course redesign initiative (CRI) at Florida State University (FSU) revealed that many students in on-line and redesigned environments experience a greater sense of interaction and support than in courses based on traditional models of delivery. The results in the study indicated that 20 out of the 30 redesigned projects at FSU improved student learning. All of the redesigned projects reduced the cost of interaction by 40% on average with a range of 20% to 34%. Many projects increased course completion rates and also increased student satisfaction with the mode of interaction. Similar efforts produced similar results at Algonquin College and at the University of Wisconsin Milwaukee and the California State University (Twiggs, 2005).

Several studies in various settings seem to generally agree about the motivating and inhibiting factors that influence faculty's attitude towards ICT. Such studies are: Parker (2003); Miller and Husman,(1999); Betts,(1998); Dillon. et. al.,(1999); MacKenzie,et al., (1999); Rockwell et al., (1999); Crum packer, (2001). According to

the studies, motivating factor can be grouped into two categories: the intrinsic and the extrinsic. The intrinsic motivating factors are: self-satisfaction, flexible scheduling, wider audience and opportunities for research (Betts, 1998, Wolcott and Haderlie, 1998); opportunity for recognition (Betts,1998;Wolcott and Harderlie,1998); opportunity to use support services, for example administrative assistant, uploading or distribution of course materials, creation of on-line quizzes, developments of graphics reduced travel (Betts.1998a); increased course quality (Eisenburg,1998, Moskal, 1998) increased flexibility when using asynchronous media (Dillon and Wash,1996).

The extrinsic factors are: stipends, decreased workload, release times and new technology. On the other hand, the studies also seem to agree on the inhibiting factors which are: decrease in live face –to- face interaction with students: lack of time to plan and deliver an on-line course (Berge, 1998; Clay, 1999; Fritz and Marx, 1999), lack of support and assistance in planning and delivering an on-line course, the great amount of time it took faculty to learn a new medium and update their technology skills, a heavier workload with teaching in DE and slow computer access (Betts,1998; Dillon and Wash,1992; Eisenburg,1998). In the Mackenzie et al., (1999) study, faculty indicated their preference to a combination of face-to face and on-line instruction because the advantages of both formats can be realized when they are used (i.e. on-line learning anytime anywhere, face-to-face personal interaction with the instructor and class). Other factors include the changed role of the instructor to mentor or facilitator (Dooley ,(n.d.); Kaiser,1998), lack of technical and administrative support (Betts,1998; Clark,1993), reduced course quality (Betts,1998;Clark,1993),negative attitudes of colleagues (Moore,1997).

According to Dillon (1989), Dillon and Walsh (1998), and Webster and Hackerly (1997) faculty who are comfortable with technology may lack pedagogical skills that marry the technology to the content. They recommend training for faculty to support the instructional transition from instructor-centered to student-centred. Likewise, they say, training is needed to assure that the technology is secondary to the content .The researchers also say that as faculty gain experience with distance education, their attributes towards distance education becomes more positive.

Certainly, the integration of modern ICT technology signifies a paradigm shift pedagogically. While skills or technology competencies are important, they do not ensure that technology will be used effectively to enhance instruction. It is basically true that implementing technology may be a catalyst but its effective use requires a paradigm shift from teaching to learning. This requires adequate training in technology as well as adequate technical support, (Rogers, Donna, 2003). According to Crum Packer, (2001), student performance is also contingent on instructor's skill and level of effort or motivation. Crum packer says that specific instructor training and development is needed to keep with today's rapidly changing distance education milieu. Instructor-identified skills requiring improvements center on the efficient and effective use of technology and the application of a collaborative, problem based asynchronous learning. Collectively, instructor motivation, skills and pedagogical approach are intricate instructor-based issues that form an essential part of a quality distance learning education program.

In a study conducted by Wilson (1998), which quantified the needs and concerns of early-adopters who developed a WWW distance education course, and taught it, revealed that faculty concerns about web-based distance education were universal and no significantly different based on the discipline (i.e. humanities, social-sciences, science/technical or business) or as by type of post secondary institutions (large university, regional university, community college, technical school, or correspondence studies).She concluded by saying that the delivery of distance education on the WWW has great potential that cannot be realized until the needs and concerns of the faculty are met. True as the researcher's assertion may sound, there is a need to confirm it through research studies other than by generalizing the universality of a study conducted in a specific environment .It is evident that the study setting, and the sampling were all local.

For an instructor to be effective in delivering instruction by DE there is a need to appreciate that pedagogical and andragogical approaches in the current and perhaps foreseeable future, requires a change of design, delivery, and teaching styles in order to meet the needs of the changing profile of the student. In a learner-centred approach, the instructor becomes the coach while the learner is an active participant. It is then

clear that both the instructor and the learner face a challenge and opportunity, which again requires the acquisition of new skills, training and development. According to Anson (1999) and quoted by Rogers, (2000), students are learning differently today and classrooms need to become learner-centered. This infusion of information technology into the teaching and learning domain creates shifts in the skills requirements of lecturers from instructional delivery to instructional design.

The most important step from “teaching” to “ learning” is moving from a teaching culture that ignores what is known about human learning to one that applies relevant knowledge to improve practice (Angelo, 1996). Turroff, (1999), says that institutions need to realize that it is not only technology that is important but also the learning methodologies utilized to employ the technology. The instructor is required to shift from being a teaching franchise to being an enterprise that emphasizes “learning”, (Rogers and Donna, 2003).

Using the constructionist theory, the student should learn by taking information from experience. It is logical to conclude that the instructor should allow the student’s responses to be the main method of driving the lesson. This requires a shift in instructional strategies and change in content (Turrof, 1999). No doubt then that there is need for behaviour modification which requires time, patience and guidance. The distance education teacher then requires undergoing some paradigm shift in terms of instructional delivery modes.

It is important to appreciate the fact that a new initiative normally faces resistance and a paradigm paralysis. Fear of venturing into DE and to utilize ICT technology for instruction can be attributed to an absence of knowledge of the capabilities of today’s advanced technology. The innovative changes in teaching and learning via DL modes are accompanied by trials and tribulations associated with any transformation that challenges engraved beliefs, philosophies and practice, (Marshal e t al., 2003).

Most articles and studies, herein, put a lot of emphasis on the training of pedagogical skill to the faculty teaching distance courses. However, the demographic studies on distance learners indicate that they are basically adults and hence the emphasis should

be on andragogical skills (the study of how to teach adults). Adult learners are different from children and the skills a teacher uses in teaching them should be the same for adults. Otherwise, the adults will feel like they are seen as kids who have little to contribute in the learning process yet they come in with a lot of experience. As earlier mentioned, distance learning uses the constructivism approach to teaching distance learners and hence distance education faculty should explore ways of engaging the learners at the same time allowing for more independence. Teaching pedagogical skills will only create communication problems with the adult learner.

2.5 Educational Change

The move from the traditional mode of instructional delivery to ICT based DE mode involves a change, which can be referred to as educational change. Any translation or transformation of an object or a way of performing an activity involves change. People normally react to new experiences in the context of some familiar, reliable construction of reality, in which people must be able to attach personal meaning to the experiences regardless of how meaningful they might be to others (Marris, 1975). According to Marris (1975, p.22), people seek to consolidate skills and attachments, whose secure possession provides the assurance to master something new. Change occurs in two forms: through natural events or deliberate reforms; through voluntary participation or initiated change brought about by dissatisfaction, inconsistency or even intolerance with the status quo. In either case, the meaning of change will rarely be clear at the outset and ambivalence will pervade the translation (Marris, 1975). According to Schon (1971), all change involves passing through the zones of uncertainty and the situation of being at sea or being lost, of confronting more information than you can handle.

According to Fullan (2001), the crux of change is how individuals come to grips with change and that we vastly underestimate both what change is and the factors and processes that account for it. It is true that all change involves loss, anxiety and struggle and failure to recognize this phenomenon as a natural and inevitable means

we tend to ignore important aspects of change and therefore misinterpret others (Marris, 1975).

According to Fullan(2001) real change whether desired or not, represents a serious personal and collective experience characterized by ambivalence and uncertainty and if the change works out, it can result in a sense of mastery, accomplishment, and professional growth. It is important for managers of the change process and in particular, educational change, to realize that the anxieties of uncertainty and the joys of mastery of the new situation, are pivotal to the subjective meaning of educational change and to the attendant success or failure thereof[that is the facts that have not been appreciated or recognized by most educational reformists] (Fullan,2001).

The introduction of ICT technologies into DE instructional modes requires a major paradigm shift by the instructors and a major educational change in terms of the educational institution administrators. It is critical that the individuals and institutions involved in the change initiative, particularly the introduction of ICT in instructional delivery, understand the dynamics of the process of change. Otherwise neglect of the phenomenology of change-that and how people actually experience change as distinct from how it might have been intended-might lead to failure of the initiative. According to Fullan (2001), in the process of examining the individual and collective settings, it is necessary to contend with both the “how” and the “what” of change. He continues to advise that there is need to keep in mind the values and goals and the consequences associated with specific educational changes and the need to comprehend the dynamics of educational change as a social political process involving all kinds of individuals at all levels in the institution.

A major issue to contend with is whether everybody involved understands really what it is that should change and how it can be best accomplished, (Fullan, 2001). Equally important is the realization that the “how” and “what” of change constantly interact and reshape each other in the process of change. Change takes place in a social setting and solutions must come out through the development of shared meaning and that the interface between individual and collective meaning and action in everyday situations is where changing stands to fall (Fullan, 2001). An innovation cannot be assimilated

unless its meaning is shared. Dynamic conservatism is not simply an individual but a social phenomenon because individuals are members of social systems that have shared sense of meaning (Marris, 1975). According to Lindgust (1998), the role of ownership and values in an innovation is crucial to its adoption because for an innovation to be successful, it must fit the local scene and be perceived as belonging to those whom it affects. For this reason, it is important that the teaching staff be involved in an active way in the implementation and administration of a distance education program (Schuffloffel, 1994). This feeling made Cumings (1995) to suggest that distance learning programme administrators need to rethink the teacher's attitudes towards distance education.

Fullan (2001) states that change is and will always be initiated from a variety of different sources and combination of sources. At the initiation stage, the main leadership dilemma is whether to seek majority agreement before proceeding or to be assertive at the beginning. This is an issue of the leadership style and the environment in which the initiative is being introduced. Leadership is also contingent to the prevailing situation on the ground.

A major issue to bare in mind when initiating change is that there is inertia in social systems and this requires effort to overcome. It is also important to ensure that those affected by the change fully own the new initiative and the implementation process. Ownership of the change process takes time and sometimes it can create meaning or confusion, commitment or alienation or simply ignorance on the part of the participants and those others affected by change (Fullan, 2001).

Implementation of any change project is normally not an easy process for the people in charge of the project. Educational change or any other programme is technically simple and socially complex. As Fullan (1995) says, a large part of the problem of educational change may be less a question of dogmatic resistance and bad intentions (although there are certainly some of both) and more a question of the difficulties related to planning and coordinating a multi -level social process involving thousands of people. Adoption is an intricate process involving people and real change-quite distinct from "planning (on-paper)". Fullan (2001) continues to say that many

attempts at policy and programme change have concentrated on product development in a way that ignores the fact that what people do and do not do is also a crucial variable worth consideration. People are much more unpredictable and difficult to deal with than things. People are essential for the success of the proposed change. Implementation is critical because it is the *means of accomplishing desired objectives*. According to Charters and Jones, (1973) there should be concerns about the risk of appraising, “on -events”, because implementation may turn out to be nonexistent (for example no real change in the desired direction), superficial and partial. Implementation of the initiative should be seen as a variable in the change process. It determines the quality of the change in a practical sense.

The implementation process of educational change poses intrinsic dilemmas, which coupled with the intractability of some factors and the uniqueness of individual settings making it a highly complex and subtle social process. This is emphasized by Fullan (1995), who says that effective approaches to managing change call for combining and balancing factors that do not apparently go together-simultaneously for instance, simplicity-complexity, looseness-tightness, strong leadership participation, fidelity-adaptivity, and evaluation-non-evaluation. Effective change implementation requires an understanding of the process as a way of thinking.

Educational change is a dynamic process involving interacting variables over time, regardless of whether the mode of analysis is factors or themes. Fullan (2001) categorizes into three the critical factors that affect the implementation of change: factors concerned with change (need; clarity; complexity; quality or practicality); local characteristics (the local settings i.e., faculty or department); external factors (i.e., government agencies and donor community).

Huberman and Miles (1984) say that people involved in the educational change process must perceive that needs being addressed are significant and that they are making at least some progress towards meeting them. Change management research indicates that early rewards and some tangible success are critical incentives during implementation. Unclear and unspecified changes can cause great anxiety and frustration to those sincerely trying to implement them.

Change implementation is a complex process. McLaughlin (1977) found that ambitious projects were less successful in absolute terms of the percent of the project goals achieved, but they typically stimulated more teacher change than projects with low ambitions. Fullan (2001) indicates that simple changes may be easier to carry out but may not make much of a difference and that complex changes promise to accomplish more. This is good news given the kind of changes in progress these days.

Change implementers must also remember that the quality of the changes matters to the adoption process. According to Fullan (2001) when adoption is more important than implementation, decisions are frequently made without the follow-up or preparation time required generating adequate materials. Worse still is that projects are nearly always politically driven and as a result the time-line between the initiation decision and start-ups is often too short to attend to matters of quality. Deeper meaning and solid change must be born over time and the goal should be to persistently work on reforms on a multi-level meaning across the system over time.

It is critical to appreciate that an organization operates within the larger external environment whose factors can impede the change implementation process. Cowden and Cohen (1979) say that to the extent that each side (external and internal practitioners) is ignorant of the subjective world of the other, reforms will fail. The quality of relationships across the gulf is crucial to supporting change effort when there is agreement and to reconciling problems when there is conflict among these groups. Fullan (2001), imputes that the difficulties in the relationships between the external and internal groups are central to the problem and process of meaning of the proposed change and that not only is meaning hard to come by when two different worlds have limited interaction but also misinterpretation, attribution of motives, feelings of being misunderstood, and disillusionment on both sides are almost guaranteed.

After going through the handles of implementation, the project is expected to have some continuity. This normally represents yet another decision which may be

negative and even if it is positive, it may not get implemented. Huberman and Miles (1984) argue that continuation or institutionalization of innovations depends on whether or not the changes get imbedded or built into the structure (through policy, budget, timetable). Second, by the time of the institutionalization the change initiative should have created the critical mass committed to the change. Procedures should also be in place to ensure continued assistance to the project. In their longitudinal set of studies and as cited by Fullan (2001), Datnow and Stringfeld (2000) talk about the problem of “longevity of reform” and say that in many instances reform projects fail to move towards institutionalization. Change managers must appreciate that change implementation is not a linear process and that all phases must be thought about from the beginning and continually thereafter. Moreover, for the process to have effective continuity, it is important to manage staff turnover which might affect an already fragile process. The retention of staff at this point can help the change initiative establish the critical mass to support future or new changes. Certainly, this is a challenge the universities in Africa have particularly due to brain drain. Universities can train their staff on the distance mode only to be poached by other universities who give better terms of service.

Gerald (1999) says that when professional development efforts are undertaken with no vision or regard for individual’s attitudes towards change, no consideration of the barriers that may block intervention efforts, and no data to help inform the process, they are less likely to be successful. Faculty and staff development is a change process with many layers and the nature of change mandates that developers deal with vision, adopter categories barriers and formative evaluation-or deal with the consequences.

As institutions of higher learning adopt distance education as a mode of delivery, they need to appreciate that this transformation involves change. Major issues need to be therefore, considered carefully. Understandably, change is normally resisted because it involves uncertainty and ambivalence. Change itself is a social-political process that should involve all people at all levels. In the process, people’s needs and concerns must be addressed if change implementation is to be successful. Leadership particularly at the initial stages in adopting DE is critical. The local environmental

factors should not be ignored while implementing change. The continuity of the change process is as critical as the implementation of the new initiative. Many studies have been conducted in the developed world on distance education, little, if there is any, research has been conducted in the Sub-Saharan Africa. Yet the research finding done elsewhere cannot just be duplicated or adopted wholesomely. Therefore, universities in Sub-Saharan countries need to conduct research in distance education in their local environments so that they come out with homegrown solutions to integrating distance education in their teaching.

Educational institutions should expect that changes in the educational sector and in particular in distance learning are going to increase in depth and scope as a result of changes in other facets of the society. Education is the engine of social change and social transformation. Any institution that must continue being relevant in its social set-up must be fast to respond to new demands of the society and in particular be a leader in advocating and putting into practice the needed changes in performing its core activities. More importantly is that an institution must be ready to face the challenges of formulating and implementing change. It is a delicate process that requires good and effective leadership.

ICT Adoption in Distance Education

The foregoing so far indicates that lecturers need to adapt to new instructional delivery mode. It is critical for the change agent (University administrator) to realize that adoption of new technology is a tedious process. It is an issue about how the change process is managed. Inherent in any new initiative is the resistance by the stakeholders. According to Rogers (2001), there are two main barriers to technology adoption: lack of technology in the institutions and the set of established institutional norms relating to teaching methods, faculty autonomy and notions relating to productivity (i.e., teaching load, student-teacher ratio and class size). Passmore (2000) says that adoption of instructional technology merely does not lag but it often drags.

Research studies by Daugherty and Funke (1998) and Passmore (2000), report that information science faculty lacks funding, equipment, and administrative and faculty support, as some of the impending factors towards the adoption of technology.

Adoption of the new technology calls for behaviour modification particularly on the part of the lecturer. According to Rogers (2001), there are three ingredients for instructors behavior modification: access to resources which promote the desired behaviour [i.e. computers, release time, training, mentoring and consultancy]; convenience in adapting the desired behavior (i.e. standardizing presentation technology across the institution, providing on-site technicians, technical support); reward and recognition for behaviour change (i.e. monetary compensation, credit towards promotion and tenure). Many faculty members are not enthusiastic to adopt new technology because they are not convinced that using it will improve their students' learning (Neal, 1998; Reid, 1996).

Massy and Zemsky (1995) identified three levels of technology adoption. The first level is the personal productivity aids, which involves application which allows teachers and learners to perform familiar tasks faster and more effectively. The second level is the enrichment add-ins which involve injecting into the "old" teaching and learning without changing the basic mode of instruction i.e. e-mail, web page searches, use videos, multi-media, simulation to enhance classroom presentation and homework assignment. The third level is the paradigm shift, which involves the faculty and the institution reconfiguring teaching and learning activities to take full advantage of new technology. However, we need to note that merely adding technology to current instructional methods or attempting to impose a traditional format on a technology-supported learning environment is likely to produce inferior learning outcomes. There is need to engage both the lecturer and the student into active learning where the student takes more responsibility of the learning process while the lecturer takes the role of the facilitator.

While there are several strategies that administrators can use to attract and retain qualified staff, they must first establish the motivations behind the enthusiasm or lack of it towards ICT in DE. The university administrators must market the use of ICT in

DE to the staff. Ross and Kling (1999) advise that, local promotion efforts are likely to be more effective in getting faculty to become actively involved in DE- including speaking and voting favorably about distance education courses and programme proposals and teaching distance education courses-if they are successful in convincing faculty that distance education is appropriate, particularly at their own institutions and in their own academic areas. According to Lori (2003), while this is true, the difficulty often lies on the retention process. The role of the university administrators as change agents becomes critical in the adoption of ICT by staff and students. The university has a responsibility of ensuring high retention rates of the staff and students. Higher educational administrators will be responsible for identification of factors that motivate, inhibit and promote faculty involvement in the waves of change in the delivery of educational services to the customer (Marshal and Marshal, 2003).

This research study was theoretically based on the Diffusion Theory and specifically on Rogers' (1995) Innovation Decision Process Theory. The theory states that diffusion is a process that occurs over time and can be seen as having five distinct stages: knowledge; persuasion; decision; implementation and confirmation. According to the theory, potential adopters of an innovation must learn about the innovation, be persuaded on the merits of the innovation, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation.

Rogers (1995) argues that the rate of adoption is also influenced by three other things; the type of innovation decision; communication channels and the extent of change agent's promotion effort.

Studies by Wyner (1994) and Holloway (1977) indicated relative advantage and compatibility to be more significant perceptions among potential adopters of instructional technology in high schools. Eads (1984) study found compatibility to be more important attributes among students and schools' administrators. Surry's (1993) study of the perceptions of weather forecasters in regard to computer based technologies found relative advantage complexity and compatibility as important adoption consideration. It seems that the attributes significance is related to the nature and context of application.

Diffusion theory appears valuable in the attempt to explain how individuals adopt an innovation. It is apparent that organizations introduce technology without considering how individuals will adopt and relate to the technology. Surry, (1997), says, "In a very real sense, the underlying causes of instructional technology's diffusion problems remain a mystery to the field." According to Schneberger and Jost (1994) some technologists rush to blame the teachers and the intrinsic tendency to resist change as the primary cause of instructional technology diffusion problem while other people cite the bureaucracies and the inadequacy of resources within institutions.

A close scrutiny of the diffusion theory literature reveals that there are a large number of theories from a wide variety of disciplines each focusing on a different elements of the innovation process. However, the Innovation Decision Process theory (Rogers, 1995), appears to be more acceptable to the adopter based, instrumentalist, school of thought. This line of thinking focuses on the human and interpersonal aspects of the innovation process. It focuses on the end user of the innovation who will ultimately implement the innovation in a practical setting, as the engine for change.

The theory seeks to look at the social context in which the innovation will be used. The theory is both contextual and processual in nature. Tenner (1996) sees it from "the concept of revenge which occurs when new structures, devices, and organisms react with real people in real situations in ways we could not foresee". Tessmer (1990) argues that when an innovation is introduced to individuals, a variety of factors, mostly unrelated to the technical superiority influence the decision to adopt or reject it. The focus of the Innovation Decision Process theory is on the individual and not the organization. The unit of study in this research study is the individual and therefore the theory is seen to be more relevant and applicable. This study took an instrumentalist line of thought because it focused on the use of the innovation (ICT technology in DE) by individual instructors. This is as opposed to the deterministic school of innovation diffusion philosophy, which focuses on the innovation as an object and not how individuals or organizations will use it. This line of thinking assumes that a superior technology will automatically be adopted. It ignores the social context of the innovation. However, Linda (1991) criticizes Rogers (1995) model by

saying that the model lacks content explanation and complexity explanation of the process of organizational innovation.

In their study called *The Thwarted Innovation Report*, Zamsky and Massy (2004) identified four distinct e-learning adoption cycles, each of which requires a different level of change in instructional culture. The first one, was the “enhancement to traditional course/programme configuration”, which requires the least change in terms of institutional teaching and learning processes. The second involves the introduction of the new course management system. The third involves the use of imported course objects, for instance, multimedia applications and interactive simulations. The fourth is the most challenging e-learning adoption cycle characterized by new course and /or programme configurations where lecturers and their institutions re-engineer teaching and learning activities to take full and optimal advantage of the new technology. Zamsky et al.,(2004) say that active learning and new roles for teachers and students are the necessary components of this adoption cycle. The findings of the report suggest that although both the first and second cycles in the e-learning adoption are in the early majority stages, the third and fourth cycles remain in the innovation stage. Zamsky 2004,p.57) conclude that the problem comes from the fact that e-learning took off before people really knew how to use it. The researchers point out that even when using e-learning technologies, most lecturers continue to teach in the way they taught, and that e-learning will fail to realize its full potential until lecturers change how they teach. The researchers go further to say that the rapid introduction of learning management systems “reduced the e-learning impact on the way most faculties teach” (ibid.p.53). It is apparent that e-learning is being given a “surface” approach. Kember (1997) says that the reason for the way e-learning is adopted in tertiary education lies most likely in the adopter’s approaches to teaching in general, which are often the result of their conceptions about teaching and learning.

In another study by Marshall (2005) and based on the data collected from six of the eight NZ universities and three polytechnics, which evaluated the institutional capability to sustain and deliver e-learning, it was revealed that the main weakness in the adoption of e-learning was directly related to the teaching and learning aspects of the e-learning system. It was observed that learning objectives were used poorly in e-

learning papers in most institutions and even when stated the learning objectives were often “dominated by recall and comprehension rather than by analysis and evaluation (ibid p.9). The report also indicates that there was lack of clear relationship between e-learning technologies and the desired educational outcomes.

According to Rogers (1995, p.221), the provision of incentives may change the pattern of adoption. However, individual lecturers may be led to adopt the e-learning because of the incentives provided and not because they really want to adopt the technology. Such a situation may affect the sustainability of adoption. It may increase the rate of adoption but lead to a reduction in quality.

Elgort (2006) suggests that the solution should be to approach e-learning innovation as a multidimensional process located in two planes: the plane of technology and the plane of pedagogy. He observes that at any given point in time, both individuals and institutional adoption of e-learning can be undergoing different adoption cycles. He continues to state that currently the adoption of e-learning technologies especially the LMS is located at a more advanced adoption stage compared to the teaching and learning innovation. According to Elgort (2006), the e-learning chasm is not located within a linear adoption process but between the two interrelated but distinct components of e-learning: adoption of e-learning technology innovation and adoption of the e-learning pedagogy innovation. This chasm needs to be overcome because if the lecturers believe in the information transmission approach to teaching, they will use e-learning to facilitate this mode of learning and any tools that do not align with this approach will either be ignored or misused. Prebble et al., (2005 p.60) say that effective e-learning viewed as an educational innovation requires reconceptualization of traditional teaching and learning paradigms especially in relation to the roles of teacher and learner. He continues to say that staff development programmes can be effective in transforming beliefs about teaching and learning and teaching practice.

Rogers (1995) says that whether or not the innovation meets a perceived need it will influence the rate of its adoption. Therefore, academic development programmes can build awareness in the lecturers about a wider range of strengths, weaknesses,

potentials and strategies of e-learning and this can enable them to construct better e-learning environment.

Each of the innovation diffusion models discussed above have some valuable contribution in how people adopt an innovation. They have mainly built upon Rogers' (1962) innovation diffusion model. Rogers (1995) model was a more general explanation of how individuals adopt an innovation. The CBAM (1999) was related to how teachers adopt innovations in education. The Moore's (1999) model was focused on the psychographic characteristics influence on the individual's adoption of an innovation. The model took a marketing perspective and therefore, it was relevant for this study. This is because the universities need to effectively market the idea of distance education to its lecturers if they have to adopt it. The university through the Center of Open and Distance Learning has to understand the psychographic and the general environmental characteristics of each of the six colleges in order to sell the concept of distance education to them.

E-readiness

Yet another critical area of ICT that needs to be addressed is e-Readiness. According to Arce and Hopman (2002), E-readiness originated by the intent to provide a unified framework to evaluate the breadth and depth of the digital divide between the less developed and the developed countries. E-readiness can be defined as the degree to which a community or a country is prepared to participate in the networked world (Sach, 2000; D.I.T, 2003). E-readiness measures the capacity of nations to participate in the digital economy by judging the relative advance of the most important areas for the adoption of the ICTs and their most important applications (McConnel Intl., 2001). It acknowledges the ongoing efforts relating to overall economic competitiveness and to the more specific examination of the role of ICTs in national economic developments process (Kirkman et al., 2000). It is evident that there is a very wide gap between the developed and the developing world in terms of e-readiness. This situation might even aggravate the already bad situation interims of distribution of wealth. It is even worse when we consider the world's *NEW ECONOMY* which is and will be driven more by Knowledge based on information.

It is observable that the global information society is a result of technological revolution that allows greater closeness between people by facilitating transmission of information (texts, image, video, etc.) and producing a revolutionary transformation in economic, technological cultural occupational, spatial and cultural arenas (Webster, 1995). It is generally accepted that advantages in technological competencies lead to a better performance in innovation, international competitiveness and trade (Archbugi and Michie, 1998). This has brought about the emergence of the “New Economy” and its effects, in terms of growth, trade and investment across all the sectors making use of the new ICTs.

Information is now viewed as a basic raw material that is being consumed at an enormous scale in the socio- economic processes and thus having important competitive value. Unfortunately, neither competitive value accrues evenly across countries nor technological diffusion limits the difference in national political, economic, social and cultural structures. As Carlsson (2004) argues, it is very likely that digitization of information will only benefit a few countries which have the capacity to harness the required resources.

The education sector and particularly the higher institutions of learning (universities) need to consider the state of E-readiness. Blustain et al., (1999: 5) say that, “colleges and universities are being assaulted from several directions with new competitors, new technologies and new approaches to education. Many have chosen to ignore the warning signs, hoping it will just go away. Others have rolled out a few online courses or have encouraged deans to develop new programmes. Few institutions have developed a coherent strategy for ensuring success in the new environment. It is also observable that many people tend to hold that technology is the most important determinant of success of teaching and training. However, the most critical problem facing universities is the resistance to innovate and experiment with new methods of instructions to improve the quality of education (BoK, 2003).

There has been a tendency for universities to focus more on the e-learning technology per se instead of how the technology can improve the learning process. This is perhaps why Garrison and Anderson (2003:3) says, *[The essential features of e-*

learning extends beyond its access to information and builds on its communicative and interactive features. The goal...is to blend diversity and cohesiveness into a dynamic and intellectually challenging 'learning ecology'. This interactivity goes far beyond the one-way transmission of content and extends our thinking regarding communication among human being engaged in the educational process].

Several experiences in the developing countries attest to the fact that Internet, insufficient resources, outdated hardware and incompatible software are not a justification for not using modern technology. For example, Universidad Estatal a distancia de Costa Rica has used very low budgets to produce multimedia courses and materials for use on the internet, and have also designed virtual laboratories that can be run on cheap computers (in Monge- Najera et al., 2001). Also, ENLACES, a Chilean initiative uses CDs to supply educational content to schools without necessarily using the Internet. It comes out clearly that the main determinant of success is the quality of learning process and not technology. This is more the reason why the understanding of the state of readiness to adopt DE and use of ICT by the lecturers is important.

It is important to strike a good balance between the use of technology and the need to uphold the national interest of achieving good quality education. There is need to maintain a correlation between education and quality of learning. The achievement of the goal depends on the readiness of the lecturers to shift from the lecturer-centred teacher to student-centred learning. In addition, there should be a focus towards moving to life-long asynchronous, interactive and collaborative learning which should be hedged on a "culture of learning". There are many studies whose results show that the use of technology for instructional purposes enhances reasoning, provokes critical thinking, and deepens understanding. For instance a study by the Netherlands (cf. Lohner et al., 2005) shows how students collaborate together in building runnable computer models in a discovery learning environment. Hiltz(1995) also reported that students in collaborative learning conditions had more constructive learning processes and attained higher grades than students in other conditions. According to Voogt et al., 2005), the use of collaborative learning environment can help to overcome physical barriers in distance education between student and teacher, and help to

improve learning. However, the process of realizing the potential of technology to create “communities of practice” remains difficult because for most teachers, the use of technology is yet not congruent with their daily routines (Voogt et al., 2005).

A critical look at the available literature shows that there are two levels of e-readiness. There are studies that have focused on the global e-readiness while the other s focus on the local e-readiness. What is observable is that the global studies focus on various aspects of e-readiness mostly related to e- connectivity, business environment and the new economy while they grossly neglect e-readiness in education. Such studies are The Network Readiness Index (NRI) report 2001-2001 which used the Economist Intelligence Unit to convey the level of education and literacy and level of Internet literacy as indicators within the 15% weight given to social and cultural infrastructure of a country. The McConnells Intl.(2000) model also gave little attention to education. It considered only one element regarding education, that is, the quality of and participation levels in the education system. The Bulgarian e-readiness report (in ARC Fund, 2002) assessed the ICT infrastructure in Schools and Universities in Bulgaria, availability of Internet access, and the presence of ICT in the school curricular. However, the reports do not provide a clear framework on how to assess the state of e-readiness for the education institutions particularly the universities. This is an area that requires some study so that an instrument can be developed to measure the various variables of E-readiness in universities.

2.7 Summary of the Reviewed Literature

From the literature reviewed above, it is evident that the role of the lecturer has largely been ignored in distance education activities though apparently DE requires new skills and attitudes different from the traditional classroom teaching environment. The main obstacles associated with the acceptance or adoptions of DE technologies are: organizational change; change in lecturer roles; and change in administrative structures.

Evidently, a lot of research has been conducted on how the learner adopts new technologies in the learning process. Relatively little research has been done on how

lecturers adopt new instructional technologies yet they impact on the rate of its adoption.

It comes out clearly from the literature that lecturers' are motivated by both intrinsic and extrinsic factors. The prominent intrinsic factors cited by many of the studies are: self-satisfaction; flexible scheduling; wider audience; opportunity for research; opportunity for recognition; opportunity to use support services; administrative assistant: uploading or distribution of materials; reduced travel; creation of on-line quizzes; development of graphics; increased course quality and increased flexibility when using asynchronous media. Among the extrinsic factors, the most commonly mentioned by the various studies are: stipends; decreased workload; release times; use of new technology.

There are several factors that inhibit the lecturers from participating in distance education. Such factors are: decreased live face-to-face interaction with the learners; lack of time to plan and deliver an on-line course; lack of support and assistance in planning and delivering on-line courses; the great amount of time to learn new medium and update technology skills; heavier workload; slower computer access; the changed role of the instructor to a mentor or facilitator; lack of technical and administrative support; reduced course quality and negative attitude of colleagues.

It is also coming out clearly that the attitude the lecturers hold is critical to the successful implementation of DE. Various studies have indicated that an attitude depends on the level of motivation or de-motivation of the lecturers; the level of familiarity with DE; experience with DE; familiarity with the specific DE project at hand or being implemented and its logistics; the level of the lecturer's involvement. There is a positive link between lecturers' attitude towards DE and their adoption of it. Apparently, lecturers' concerns and needs about DE or on-line courses are universal, irrespective of discipline, type of institution or geographical location (Carol, 1998).

Literature on educational change and also on the adoption of ICT indicates that the introduction of ICT in distance education modes requires a major paradigm shift by

the lecturer and a major educational change in terms of educational institutions administrators. It is clear that inertia to change is an issue to be addressed particularly on the needs and concern of those affected by the new initiative. More critical is the role of leadership particularly at the initial stages of the new initiative. (Fullan, 2000; Huberman and Mile, 1984).

Adoption of new technology calls for behaviour modification particularly on the part of the lecturers. The university administrators need to establish the factors that motivate or inhibit lectures to adopt new instructional technologies. This is because having the right attitude alone will not assure the effective implementation of distance education. Issues of harmonization of management structures, organizational strategy and organizational culture need to be addressed.

Two main barriers to technology adoption come out clearly: lack of technology in the institution and the set of established institutional norms relating to teaching methods, faculty autonomy and notions relating to productivity (Rogers, 2000). DE by its very nature especially the aspect of separation of teacher and learner in time and space seems to orient itself to the constructionist theories of learning. DE places a lot of autonomy on the learner in terms of deciding when, where and what to learn.

It is imperative that for effective adoption of distance education by lecturers, universities need to re-look at the pedagogical and andragogical skills that marry technology to the content. This implies the need to train lecturers in both the use of new technology and on both andragogical and pedagogical issues. It is also clear that integration of ICT technology signifies a paradigm shift, which needs time to nature.

Adoption of ICT in distance education instruction involves changing from a previous behaviour. In many instances, people resist change and therefore, the adoption of ICT in DE will be resisted. University lecturers require behaviour modification. The main behavior modification issues to be addressed are: access to resources; convenience in adopting the desired behaviour; and reward and recognition for behavior change. At each stage in the distance education adoption process, lecturers' concerns and needs have to be addressed. Lecturers have many questions about the viability of distance

education as an alternative instructional delivery mode. Otherwise, the new initiative will be resisted and it will not be successful. Critical in the process is the identification of the lecturers' attitudes towards DE and the factors that influence the attitudes. This will enable the university administrators to design intervention programmes that will address such pertinent issues concerning the lecturers' participation in DE. Though it is apparent that the factors that influence lecturers' participation in DE in the world are universal, it is important to consider the specific local factors operating in the environment. This is because each environment has its uniqueness that presents unique opportunities as well as challenges.

The attitude the administrators hold towards ICT use in DE will directly affect the attitude of the faculty and filter down to the students. It is critical that the administrators believe in DE in its totality. Also important is to recognize that having the right attitude alone will not assure the effective implementation of DE programme. Issues of harmonizing the structures, strategy, and culture of the organization should be high in the agenda. Such issues are beyond the scope of this study. However, at the end everything must be harmonized together beginning with the administrator then the student and the faculty in the middle.

Many change agents (the university administrators) ignore the local factors prevailing at the point where changes will be operationalized. Issues of organizational culture need to be born in mind. The change agents need to ask themselves whether the organizational culture supports the proposed changes and if not strategies to deal with this nature of problem should be designed and implemented. This becomes a more serious issue in organizations with multi-level complex structures like the University of Nairobi and other institutions of higher learning.

A major worry coming out of the reviewed literature is that majority of researchers in distance education still focus their attention on pedagogical instead of andragogical issues. Most of the distance learners are adults and they learn differently from children. Therefore, it is not fair to directly transfer pedagogical approaches to learning into adult learning environments. It true that distance learning predictably will be the main instructional vehicle in the future both for adults and for children.

However, the two groups have difference demographically with the obvious implication that they should be segmented in terms of learning and teaching approaches.

The studies analyzed also have concentrated on identifying the factors and attitudes lectures have towards DE. They have fallen short of proposing *the process* of facilitating the adoption of DE by lectures. Second they have tended to show lecturers attitude and readiness to adopt DE in absolute terms and not in real terms. This study will go deeper in looking at the relationships that exist between the variables and their strength. It will also propose a step-by-step strategic process of facilitating the adoption of DE.

The main theme in this study is the management of change. There is need to recognize that in order for change to be sustained, the change must be affordable and integrated into the common practice within the organization. Simply adding on new ways of doing things does not guarantee success. There is need for structural change, which will require commitment of resources from the organizations core budget. Over reliance on external funding to facilitate the change initiative must be avoided. The support in terms of materials and belief in the need for innovation must come from within the organization.

CHAPTER THREE

STUDY METHODOLOGY

3.1 Research Design

This research was a cross-sectional study and used a survey design. The colleges were the units of analysis. Questionnaires were prepared and sent to the sampled respondents by the University mail system. Correlation research design approach was used to correlate factors that determine lecturers' attitudes towards ICT to the lecturers' readiness to participate in distance education.

The questionnaire had three sections. The first section sought to obtain the following background information: gender, teaching experience, status of tenure, and familiarity with DE. The second section sought to get the importance of a list of factors to the lecturer's participation in DE. The third section investigated how the lecturers' attitude relates to their readiness to adopt ICT instructional delivery modes in their courses. The questionnaire in section three was adapted from O'Malley and McCraw (1999) and Bratina and Templeton (1997). Items that were judged as attributive to construct ratings was summed and divided by the number of items to obtain a mean rating on a specific construct. To overcome the within and between confoundment, the mean rating was obtained for specific items reflecting certain constructs. A neutral point was incorporated in which a t-test was used to determine whether the ratings departed significantly from the neutral point. A high mean rating would mean a higher agreement with the construct or item. On the bases of the survey, respondents were grouped into three categories of: supportive (positive); divided support (lukewarm); opposed (negative).

As mentioned in chapter 2 measuring of attitudes and their relationships to behaviour is a complex and subtle activity. According to Hogg and Vaughan (1995), the basic assumptions of attitude measurements are: that a person's attitude can be measured by asking questions about thoughts, feelings, and likely actions towards the attitude object; that it is also possible to measure attitudes by quantitative techniques; that a

particular test item or other behaviour indicating an attitude has the same meaning for all respondents so that a given response is scored identically for everyone making it ;that in a typical questionnaire respondents are asked to indicate whether they agree or disagree with each of a series of belief statements about an attitude object and that those attitudes are arranged along an evaluative continuum ranging from favourable to unfavourable.

Several attitude measurement scales have been designed by researchers, for example the Thourstone scales, the semantic differential scales, the Likert scales, to mention but a few. This study used the Likert scales in which the respondents place themselves in a continuum and a person's score can be summed and the resulting total used as an index of that persons' attitude. A researcher can tell a good item from a bad one by correlating each item with the total.

Although Likert scales are normally regarded as ordinal scales, the study will treat them as interval scales. Several researchers have supported the use of Likert scales as interval scales based on purpose and the research instruments used. "... Likert scales may sometimes lead to interesting results justifying an approximate equal-interval assumption (Dave Krantz, 1996). Likert scales have been used in marketing research as interval scales for attitude measurement because they enable researchers to calculate mean scores, which can then be compared. Susan Jamieson (2004) states that, Likert scales are either ordinal or interval scales and many psychometricians would agree that they are interval scales because when well-constructed, there is equal distance between each value so that if a Likert scale is used as a dependent variable in an analysis, normal theory statistics used are ANOVA or regression.

3.2 Population

The population of this study comprised all the 1327 lecturers of the University of Nairobi, both full-time and part-time in all disciplines broadly divided in the six colleges of the University of Nairobi. University of Nairobi disciplines were categorized according to the six colleges, which are discipline –based. The University

of Nairobi is organized into six university colleges, which are discipline based. The colleges are:

- The college of Education and External Studies, which is basically teaching educational courses (CEES).
- The college of Humanities and Social Sciences basically teaching social sciences (CHSS).
- The college of Agriculture and Veterinary Sciences basically teaching agro-based courses (CAVS).
- The college of Biological and Physical Sciences basically teaching general science courses (CBPS).
- The college of Health Sciences basically specializing in teaching medical courses (CHS).
- The college of Architecture and Engineering (CAE) which specializes on the teaching of architectural and engineering courses.

3.3 Sampling Design

The study used a stratified sampling technique. The research study focused on all the six colleges, of the University of Nairobi. This was to ensure reliability of the results. The University of Nairobi has 14 faculties, 83 departments, 7 institutes, and 2 schools distributed in six colleges.

The total population of lecturers is 1327. A sample of 297 was selected for the study based on percentage representation of a faculty to the total population.

Table 3.1: Sampling as per college

COLLEGE	FACULTIES	SAMPLE SIZE (n)	%
COLLEGE OF EDUCATION AND EXTERNAL STUDIES(CEES)	• FACULTY OF EDUCATION • FACULTY OF EXTERNAL STUDIES	72	24
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES(CHSS)	• FACULTY OF COMMERCE • FACULTY OF LAW • FACULTY OF ARTS • SCHOOL OF JOURNALISM • IDS • IAS • PSRI • IDIS • CIPL	71	23.9
COLLEGE OF BIOLOGICAL AND BIOLOGICAL SCIENCES (CBPS)	- FACULTY OF SCIENCE & SCHOOL OF INFORMATICS AND COMPUTER STUDIES - INSTITUTE OF TROPICAL DISEASES	49	16.4
COLLEGE OF HEALTH SCIENCES(CHS)	- FACULTY OF PHARMACY & ACULTY OF MEDICINE &	29	9.76

	DENTAL SURGERY		
COLLEGE OF AGRICULTURE AND VERTIRINARY SCIENCES(CAVS)	- FACULTY OF AGRICULTURE - FACULTY OF VETRINARY SCIENCE	42	14.14
COLLEGE OF ARCHITECHTURE AND ENGINEERING(CAE)	- FACULTY OF ARCHTECHTURE.& DESIGN - FACULTY OF ENGINEERING	37	11.44
TOTAL	22	297	100

3.4 Data Collection Methods

The study used both quantitative and qualitative methods to collect data. However quantitative method was the main method used. It used the survey method of collecting data. A survey mail was sent to a sample of lecturers and administrators of the distance learning programmes in the various faculties (deans, directors, chairmen). For the part-time lecturers who teach distance learning programmes, the questionnaire was administered to them during the holiday tuition sessions or any other convenient time. The part-time lecturers teaching at the extra-mural centers got their questionnaires at the centers in which they teach. There are six extra-mural centers in the University of Nairobi, located in Nairobi, Kisumu, Kakamega, Nyeri, Nakuru, and Mombasa.

3.5 Data Analysis

The data of the study were of nominal and ordinal interval nature. Non-parametric and parametric tools were used to analyze the data. Descriptive statistics, for instance, the measures of central tendencies (mean and mode) and dispersion (variance) were

used to analyze the data. One-Way ANOVA was used for the interval data. Analysis of variance (ANOVA) was used to determine the variance in attitude towards the adoption of ICT in DE between the various University of Nairobi disciplines. The data were to determine instructors' familiarity with distance education and how it relates to the instructors' attitude towards distance education and their readiness to adopt ICT in distance education. Data was analyzed both manually and by use of SPSS computer programme. The collected data were coded appropriately using relevant and practical data coding methods. The analyzed data were presented in tabular format.

CHAPTER FOUR

DATA PRESENTATION

4.0 Introduction

This chapter discusses the results of the instrument reliability tests and the respondents' profiles. In chapter 5, the data on the factors that influence lecturer's attitude towards the adoption of DE and use of ICT in teaching are interpreted and analyzed. In chapter 6, the lecturers' attitudes towards the adoption of DE are interpreted and analyzed. Chapter 7 analyses the main issues that concern the lecturers in the process of adopting DE and as they prepare to use ICT in teaching. In Chapter 8, multivariate analyses are used to develop a path analysis model showing how the main issues of concern to the lecturers influence their readiness to adopt DE. Chapter 9 discusses the findings and makes conclusions of the thesis. It further gives recommendations and suggests areas of further research.

4.1 Instruments Reliability and Consistency Tests

Each of the three sections of the questionnaire was subjected to Cronbach's Alpha tests of numerical coefficient of reliability. The computation of alpha is based on the reliability of a test relative to the other tests with the same number of items and measuring the same construct of interest (Hatcher, 1994). It measures how well a set of items (or variables) measures a single undimensional latent construct. It is a function of the number of items and the average inter-correlations among the items (Santos, 1999). Please see Appendix 11.6.0 for the calculations.

Three methods were used to determine the reliability of each of the sections. In section 1, the covariance matrix of the seven items yielded an alpha value of 0.9012 with standardized item alpha value of 0.8998. The inter-class correlation two-way mixed effect model of absolute agreement yielded an alpha value of 0.9012 and a standardized item alpha value of 0.8984 while the inter-class correlation coefficient

(two-way random effect model- consistency definition yielded an alpha value of 0.912 with a standardized alpha value of 0.8984).

In section 2, the covariance matrix of the 14 items yielded an alpha value of 0.97777 with standardized item alpha value of 0.9825. Both the inter-class correlation two-way mixed effect model of absolute agreement and the inter-class correlation coefficient (two-way random effect model- consistency definition yielded an alpha value of 0.9825 with a standardized alpha value of 0.8984.

In section 3, the covariance matrix of the 25 items yielded an alpha value of 0.9912 with standardized item alpha value of 0.9924. The inter-class correlation two-way mixed effect model of absolute agreement and the inter-class correlation coefficient (two-way random effect model-consistency definition and the space-saver method yielded the same values (0.9912 and 0.9924 respectively).

4.2 Questionnaire Return Rate

The survey instrument was administered to a sample of 300 lecturers out of a population of 1297 University of Nairobi lecturers. A stratified sampling technique was employed to ensure that all the University of Nairobi colleges representing the broad university disciplines were proportionately involved. A total of 189, representing 63% of the sampled lecturers completely filled and returned the questionnaires. Table 4.1 below indicates the return rate per college.

Table 4.1: Questionnaire return rate.

College	Sample size	Returned questionnaires	% return rate
CEES	72	53	73.61
CAVS	42	16	3.10.
CHS	29	15	51.72
CHSS	71	39	54.93
CAE	34	28	82.35
CBPS	49	38	77.55
Total	297	189	63.64

4.3 Response in terms of gender

Out of the 186 respondents male lecturers were 140 (74.07%) while the females were 49 (25.93%). Table 4.2 shows the responses in terms of gender as per the colleges. This indicates that the ratio of men to women in the university is 3:1.

Table 4.2: Questionnaire response rate in terms of gender

College	Male	Female	n
CEES	41	12	53
CAVS	10	6	16
CHS	7	8	15
CHSS	28	11	39
CAE	20	8	28
CBPS	34	4	38
Total	140	49	189
%	74.07	25.93	

4.4 Response Rate in terms of Category of Lecturer

The University of Nairobi has two categories of lecturers, the full-time and part-time. Full-time lecturers are employed to teach on full-time basis while part-time lecturers only teach for specific hours and are hired on short-term need basis. A total of 152 (80.42%) of the respondents were full-time lecturers while 37(19.58%) were part-time. Table 4.3 indicates the category of the lecturers per college.

Table 4.3: Questionnaire response rate in terms of category of the lecturer.

COLLEGE	FULL-TIME	PART-TIME	n
CEES	22	31	53
CAVS	16	0	16
CHS	15	0	15
CHSS	38	1	39
CAE	25	3	28
CBPS	36	2	38
Total	152	37	189
%	80.42	19.58	

4.5 Response rate in terms of Lecturers' tenure status

The lecturers have different status of tenure. Some are on permanent basis while others are on contractual terms. Those on permanent terms are normally at the lecturer position and above and retire at the age of 70. In most cases the lecturers on contract are already retired and are hired on a two-year contract agreement. Among the sample, 139 (73.5%) were permanent while 50 (26.54%) were hired on contractual basis. Table 4.4 shows the respondents in terms of status of tenure.

Table 4.4: Lecturers' response rate in terms of status of tenure

COLLEGE	PERMANENT	CONTRACT	n
CEES	36	17	53
CAVS	16	0	16
CHS	11	4	15
CHSS	29	10	39
CAE	22	6	28
CBPS	25	13	38
<i>Total</i>	<i>139</i>	<i>50</i>	<i>189</i>
%	73.54	26.46	

4.6 Teaching Experience of the Respondents

Lecturers' age was an important variable in this study. Apparently 22.75% of the lecturers have teaching experience of over sixteen years. Over sixty-five percent 65.05% of the respondents have over 5 years of teaching experience and 34.95% have teaching experience of between 1 and 5 years. The lecturers' teaching experience is indicated in Table 4.4 below.

Table 4.5: Teaching experience of the lecturers

COLLEGE	0-2 YEARS	3-5 YEARS	6-10 YEARS	11-15 YEARS	16 AND ABOVE	n
CEES	18	12	9	6	8	53
CAVS	1	1	2	4	8	16
CHS	2	2	4	3	4	15
CHSS	5	7	9	15	3	39
CAE	4	1	4	6	13	28
CBPS	5	8	14	4	7	38
<i>Total</i>	<i>35</i>	<i>31</i>	<i>42</i>	<i>38</i>	<i>43</i>	<i>189</i>
%	18.52	16.40	22.22	20.11	22.75	100

4.7 Respondents Level of computer literacy

Distance education relies heavily on information communication technology (ICT) for transmitting its educational materials to the learners. With the current developments in telecommunication, a lecturer needs to have some basic computer literacy knowledge if they have to offer their courses in any electronic form. Therefore, computer literacy was a variable considered in this study. Over 79.89 % (151 respondents out of 189) of the lecturers indicated that they have some computer literacy skills while 20.11 % (38 respondents out of 189) indicated that they do not have. Table 4.6 below indicates whether the respondents have computer literacy skills or not.

Table 4.6: Lecturers' Computer Literacy

COLLEGE	YES	NO	n
CEES	36	17	53
CAVS	9	7	16
CHS	12	3	15
CHSS	34	5	39
CAE	25	3	28
CBPS	35	3	38
Total	151	38	189
%	79.89	20.11	189

4.8 Availability of a Computer to the Respondents in their Offices

For lecturers to translate their teaching materials into distance format availability of a computer in their offices is very important. The survey results indicated that 59.26 % (112 respondents) have a computer in their offices while 40.74% (77 respondents) do not have a computer in the offices. This high percentage of individuals without a computer in the office would slow the process of translating materials into DE formats hence also slowing the rate of adopting DE. Table 4.7 indicates the number of lecturers with or without a computer in the office.

Table 4.7: Availability of a computer to the Lecturers in the office

COLLEGE	YES	NO	n
CEES	24	29	53
CAVS	10	6	16
CHS	9	6	15
CHSS	29	10	39
CAE	17	11	28
CPBS	23	15	38
<i>Total</i>	<i>112</i>	<i>77</i>	<i>189</i>
<i>%</i>	<i>59.26</i>	<i>40.74</i>	

4.9 Availability of a Computer to Lecturer at Home

In most cases, lecturers prepare their teaching materials both at home and in office. Therefore, availability of a computer at home is also critical in DE adoption process. The survey indicated that 76.72% (145 respondents) had a computer in their homes while 23.28 % (44 respondents) do not have. Table 4.8 indicates the respondents' state of computer availability at their homes.

Table 4.8: Availability of a computer to the Lecturers at home

COLLEGE	YES	NO	n
CEES	32	16	53
CAVS	10	6	16
CHS	11	4	15
CHSS	33	6	39
CAE	23	5	28
CPBS	36	2	38
<i>Total</i>	<i>145</i>	<i>44</i>	<i>189</i>
<i>%</i>	<i>76.72%</i>	<i>23.3</i>	

4.10 Respondents Readiness to be trained in E-Learning

E-learning is becoming a major electronic delivery mode of distance education. It is already a major form of DE in the developed countries and it is slowly gathering momentum in the developing countries. The survey indicated that 87.3 % (165 respondents) indicated that they are ready to be trained in E-learning. Only 12.7 %(24 respondents) indicated that they do not want to be trained. The respondents' response on whether or not they would like to be trained in e-learning is indicated in Table 4.9.

Table 4.9: Lecturers' readiness to be trained in E-Learning

COLLEGE	YES	NO	n
CEES	50	3	53
CAVS	16	0	16
CHS	11	4	15
CHSS	33	6	39
CAE	20	8	28
CPBS	35	3	38
<i>Total</i>	<i>165</i>	<i>24</i>	<i>189</i>
<i>%</i>	<i>87.30</i>	<i>12.70</i>	

4.11 Respondents Prior Participation in DE

The prior knowledge lecturers have in distance education is assumed to be important in the distance education adoption process. The survey indicated that only 44.25 % had prior participation in distance education. Over half (55.75%) had no prior participation in any DE activity. Table 4.10 shows the frequencies of respondents' prior participation in DE.

Table 4.10: Lecturers' prior participation in DE (items 6, 7&8)

COLLEGE	YES	NO	n
CEES	93	63	53
CAVS	4	28	16
CHS	13	20	15
CHSS	30	85	39
CAE	9	66	28
CPBH	82	29	38
Total	231	291	189
%	44.25	55.75	

4.12 Respondents Experience in Writing DE Course Materials

The preparation of DE course material is a tedious and demanding activity. The University of Nairobi has been in the distance education activities since 1967. A number of lecturers have participated in DE and have written DE materials. The survey indicates that only 47.09 % (89 respondents) had ever written any DE material. Over half of the respondents 52.91 % (97respondents) have not. Table 4.11 below indicates the respondents who had or had not written any DE materials in the University of Nairobi.

Table 4.11: Experience in Writing DE materials.

COLLEGE	YES	NO	n
CEES	38	15	53
CAVS	1	15	16
CHS	3	12	15
CHSS	4	35	39
CAE	15	13	28
CPBS	28	10	38
Total	89	97	189
%	47.09	52.91	

4.13. The Factors that Influence Lecturers’ Participation in Distance Education

4.13.0 Introduction

In section two of the questionnaire, the respondents were given 14 factors that are considered critical for lecturers’ participation in DE. The respondents were asked to state whether they considered each of the factors either “extremely important”, “very important”, “important”, “not very important” or “not important at all”. The survey indicates that 89.7% of the respondents considered the 14 factors as either “very important” or “extremely important”. Only 10.3% indicated the factors to be “not important”, “not very important”, or “not sure of its importance”. The main objective was to establish whether the factors influencing lecturers’ participation in distance education in other institutions of higher learning in the world are also important to the University of Nairobi lecturers. The value of each of the six Likert scales was as indicated here below:

- Extremely important = 5
- Very important = 4
- Important = 3
- Not very important = 2
- Not important at all = 1
- Not applicable = 0

4.13.1 Descriptive Analysis of the Factors that Influence Lecturer Participation in DE

The mean, the standard deviation, were the measures of central tendency and measures of dispersion respectively.

The means score of the 14 factors was 4.37 which is within the “very important” scale. Therefore, the results indicated that the respondents considered the 14 factors to be very important in influencing them to participate in distance education activities. Any factor that had a mean score of 3 and above was considered an important factor.

Note that a mean score of 3 was the mean of all the scales. Table 5.1 here below indicates the frequencies for the 14 items measured in a six Likert scale.

Table 4.121: Frequencies of the importance of the factors that influence lecturers' participation in DE

SCALE	FREQUENCY	%	VALID %	CUMULATIVE %
Not important at all	14	0.3	0.6	0.6
Not very important	125	2.9	5.2	5.8
important	108	2.5	4.5	10.3
Very important	874	20.4	36.4	46.7
Extremely important	1281	29.6	53.3	100
Not applicable	0	0	0	0
Total	2402	55.7	100	

The descriptive statistics analysis of the 14 factors is indicated in Table 5.2 here below.

The mean was the preferred measure of central tendency and variance as a measure of dispersion. The mean score for the 14 factors was 4.37. This indicates that the factors were generally very important to the respondents. The variance of the scores and the standard deviation was 0.704 and 0.839 respectively.

Table 4.13: Descriptive statistics of the importance of the 14 factors that influence lecturers' participation in DE

COLLEGE	MEAN	MEDIAN	MODE	STANDARD DEVIATION	VARIANCE
CEES	4.39	5.00	5	.773	.598
CAVS	4.01	4.00	4	.983	.967
CHS	4.41	5.00	5	.753	.753
CHSS	4.44	5.00	5	.851	.753
CAE	4.26	4.00	5	.916	.840
CPBS	4.39	5.00	5	.795	.632

<i>UoN</i>	4.37	5.00	5	.839	.732
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4.13.2 Item Analysis of the Factors that Influence Lecturer Participation in DE

Each of the 14 factors was analyzed using the mean score. The mean score indicated at what point in the Likert scale the factors falls. This also indicated the level of importance the respondents attached to the specific factor. The mean score of each factor would fall in one of the following scales: “extremely important”=5; “very important”=4; “important”=3; “not very important”=2; “not important at all”=1; “not applicable”=0. Any factor with a mean score of above 3.0 was an indicator that it was important to the respondent. Any factor that scored less than 3.0 indicated that it was not of great significance to the respondent.

The mean score for each of the factors is indicated in Table 5.3. All the factors had a mean score above 3.0 (“important” scale). This implied that all the 14 factors were important in influencing the respondents’ participation in DE.

Table 4.14: The mean score per item (factor)

FACTOR(ITEM)	MEAN SCORE	STD.DEVIATION	VARIANCE	n
S201	4.03	1.091	1.190	189
S202	4.67	0.514	0.264	189
S203	4.59	0.784	0.615	189
S204	4.30	1.010	1.020	189
S205	4.07	0.899	0.809	189
S206	4.25	1.046	1.095	189
S207	4.14	0.960	0.921	189
S208	4.56	0.767	0.589	189
S209	4.38	0.894	0.800	189
S210	4.09	1.004	0.008	189
S211	4.25	0.856	0.733	189

S212	4.24	0.957	0.916	189
S213	4.00	0.812	0.660	189
S214	3.95	0.996	0.992	189
Total	4.37	0.839	0.705	189

4.13.3 Ranking of the Factors that Influence Lecturer Participation in DE

Principal Axis Factoring (PAF) was used for factor analysis. Varimax with Kaiser Normalization Rotational method was employed and factors were scored using Anderson-Rubin method. Out of the analysis, it was observed that all items had positive coefficient scores, meaning they were rated either extremely important or very important. The Kaiser Meyer- Oklin measure of sampling adequacy test score was 0.906 indicating that the sampling was adequate for factor analysis. Bartlett’s Test of Phericity was approximately (chi-square=4255.973; df.91; significance was 0.000). The results are indicated in Table 5.4.

Table 4.15: Factor’s coefficient scores (Varimax with Kaiser Normalization Rotation method).

FACTOR(ITEM)	BEFORE ROTATION	AFTER ROTATION	MEAN SCORE	n
S201	0.705	0.679	4.03	189
S202	0.885	-0.079	4.46	189
S203	0.813	-0.444	4.59	189
S204	0.908	-0.003	4.30	189
S205	0.883	0.357	4.07	189
S206	0.896	-0.065	4.25	189
S207	0.861	0.339	4.14	189
S208	0.890	-0.310	4.56	189
S209	0.812	-0.476	4.38	189

S210	0.761	-0.159	4.09	189
S211	0.865	0.060	4.25	189
S212	0.837	-0.437	4.24	189
S 213	0.867	0.048	4.00	189
S214	0.645	0.715	3.95	189

The ranking of the factors is indicated in Table 5.5. A component coefficient score of between 0 and 1 was considered as an indication that the factor rated as “very important” or “extremely important”. A component score of between 0 and -1 was considered as indication that the factor was either “not very important” or “not important at all”. A score of 0 is an indicator that the factor is neutral.

Table 4.16: Ranking of the factors (items) that influence lecturers’ participation in distance education activities.

FACTOR(ITEM)	MEAN SCORE	COEFFICIENT SCORE	RANK
S203	4.59	0.071	1
S208	4.56	0.134	2
S202	4.46	0.068	3
S209	4.38	0.090	4
S204	4.30	0.091	5
S211	4.25	0.087	6
S206	4.25	0.77	7
S212	4.24	0.080	8
S207	4.14	0.099	9
S210	4.09	0.079	10
S205	4.07	0.096	11
S201	4.03	0.128	12
S213	4.00	0.0658	13
S214	3.95	0.076	14

Testing of hypothesis on whether the factors that influence lecturers' participation in DE in other institutions are also important to the University of Nairobi lecturers.

(a) Testing of Hypothesis N0.4

One of the objectives of the study was to establish whether the factors that influence lecturers' participation in DE in other institutions in the world are also important to the University of Nairobi lecturers. The study hypothesized that the factors that influence lecturers' participation in DE elsewhere are also important to the University of Nairobi lecturers. The null and alternative hypothesis was stated in the following manner:

H₀: Factors influencing lecturers' participation in DE elsewhere are not important to University of Nairobi lecturers.

H_A: Factors influencing lecturers' participation in DE elsewhere are important to University of Nairobi

A t-test was conducted on the factor mean score at 95% confidence level. Any score above 3 was considered as an indication that the factor was important to the respondents. The mean score for the University of Nairobi was 4.37. The results ($t=3.0$ $p<0.05$) indicated that the 14 factors are also important in influencing the University of Nairobi participation in DE. Therefore, we reject the null and accept the alternative hypothesis. We can, therefore, conclude that the factors are also important in influencing the University of Nairobi participation in distance education.

(b) Hypothesis Testing N0.5

The second objective was to establish whether there is any significant difference in the mean score of the factors that influence lecturers' participation in DE between the University colleges. To achieve the objective the following hypothesis was stated and tested.

H₀: There is no significant mean difference in the factors that influence lecturers' participation in DE between the colleges.

H_A: There is a significant difference in the mean score of the important factors that influence lecturers' participation in DE between the university colleges.

A test of whether there is any significance difference between the colleges in terms of the important factors was conducted. The mean score for the colleges ranged from a lower value of 4.33 while the upper limit value was 4.40. A 95% confidence level was set. The results ($t = 4.33 < 4.40, p < 0.05$) are shown in Table 5.6, which indicates that there was no significance difference in the factors means score between the colleges. Therefore, we do not reject the null hypothesis but reject the alternative. We conclude that there is no difference in the importance of the factors to the lecturers in the various University of Nairobi colleges.

Table 4.17: Test of mean differences of factors influencing participation in DE between colleges.

COLLEGE	T	DF	SIG (2- TAILED)	MEAN DIFFERENCES	LOWER	UPPER
CEES	48.581	725	0.000	1.34	1.34	1.45
CAVS	12.581	150	0.000	1.01	0.85	1.16
CHS	20.441	157	0.000	1.41	1.28	1.55
CHSS	39.341	541	0.000	1.44	1.37	1.51
CAE	25.582	348	0.000	1.26	1.16	1.35
CPBH	38.816	489	0.000	1.39	1.32	1.46

<i>UoN</i>	<i>79.799</i>	<i>2401</i>	<i>0.000</i>	<i>1.32</i>	<i>1.33</i>	<i>1.40</i>
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4.13.4 Interpretation and Discussion of Each of the 14 Factors

1. Item S203, on the provision of adequate support from the university administration while preparing DE material ranked first with a coefficient score of 0.071 and with a mean score of 4.59. Several respondents indicated that the top management does not seem to give the required support to DE. One respondent said, "The top management is the major hindrance in the implementation of new initiatives in the university and unless they come down from their ivory tower, ODL will remain but a big dream". University administrators, at all levels, are the chief change agents in the university. If the lecturers feel that the administrators are not supportive enough morally, financially and materially, they will not also be enthusiastic to get engaged in DE activities. The chairmen of departments all the way up to the vice-chancellor must be seen to be committed to DE activities. A study conducted by Edooley (2000), concluded that administrative support which includes providing seamless infrastructure and virtual presence for distance learners; training of lecturers on technology, instructional design and pedagogy and providing incentives to staff in form of release time, mini-grants, stipends, continuing education, recognition in the promotion and tenure processes greatly enhanced the adoption rate. However, a study by Lee (2002 a), found that the perception between lecturers and administrators differed when it came to administrative support in instructional activities. This is also one of the outcomes of this study. An associated issue that needs to be addressed by the university administrators is the administrative structures that would facilitate the adoption of DE. Some respondents suggested that there should be an independent college or unit that is responsible for ODL in the university and should be directly answerable to the top management.

2. Item S208, on the provision of adequate equipment while preparing DE material, ranked second with a coefficient score of 0.134 and with a mean score of 4.56. This agrees with what the respondents wrote in the open-ended part (item 15). Many respondents indicated that the provision of adequate DE facilities is of great concern to them. In particular, the provision of Internet connectivity, its accessibility and reliability, availability of computers and study materials to the students were explicitly mentioned.
3. Item S202, on the provision of adequate time to plan, prepare and deliver DE course material ranked third with a coefficient score of 0.068 and with a mean score of 4.46. It also came out clearly that respondents feel that they need adequate time to plan, prepare and deliver DE course materials. This was mentioned by the respondents who have already participated in writing DE materials in the faculties of External Studies, Science, Education and Commerce. This feeling is also pointed out in studies conducted by Berge (1998); Clay (1999); Fritz and Marx (1999).
4. Item S209, on the provision of DE technical support to lecturers ranked fourth with a coefficient score of 0.90 and a mean score of 4.38. The mean score of this item is close to the mean score of items 204. Technical support was also mentioned in the open-ended section by the respondents.
5. Items 204, on training in the use of ICT ranked fifth with a coefficient score of 0.091 with a mean score of 4.30. ICT and its attendant technical support is a concern particularly now that instructional delivery by electronic means (E-learning) is the main trend globally. This issue was mentioned virtually in every faculty in the open-ended item 15. Many lecturers proposed that qualified ICT personnel be posted to their faculties to assist in either the development of E-learning material or in the general academic activities. This concurs with the results from Edooley (2000), which found that ICT technical support was a major factor influencing lecturers' participation in DE in Oklahoma colleges and universities.

6. Item S211, on a clear policy on promotion opportunities for lecturers participating in DE, ranked sixth with a coefficient score of 0.87 with a mean score of 4.25. This is an area that was repeatedly mentioned in the open-ended item 26 of section 3 of the questionnaire. It was a position held by many over 90% of the respondents that the university does not recognize the extra workload that lecturers perform in DE. Such work is not factored in the university promotion criteria and due to the level of commitment required to translate, design and produce DE course materials, lecturers would rather write papers for conferences because they earn promotion credits from it. This was an area that was repeatedly mentioned in the open-ended item 26 of section 3 of the questionnaire. If such work is not factored in the university promotion criteria and due to the level of commitment required to translate, design and produce DE course materials, lecturers might feel demotivated to engage in DE activities. One respondent said that he would rather write papers for conferences because they earn promotion credits from the papers instead of translating the teaching notes into the DE format.

7. Item S206, on the need for training in DE teaching methods ranked seventh with a coefficient score of 0.077 and with a mean score of 4.25. Most respondents in the university do not have any training in teaching methodologies. This affects both the regular and distance learning courses. In section 2 open-ended question 13 and section 3 item 26, the respondents overwhelmingly stated that there is need for the university to train them in DE teaching methodologies. It is equally important to note that distance students in the university are adults and that andragogical skills are important to the lecturers who mainly teach adults. Therefore, andragogy, (teaching of adults) should be taught to all the lecturers participating in DE. Adults learn differently from children and therefore, it is proposed that all lecturers be exposed to both pedagogical skills and andragogical skills.

8. Item S212, on the need to have a clear policy on issues of intellectual property rights for DE materials prepared by lecturers ranked eighth with a coefficient

score of 0.080 and with a mean score of 4.24. This was a major concern to the respondents in the open- ended section of the questionnaire. They indicated that the university did not guarantee the protection of their intellectual rights for the materials they developed. Though there is a general intellectual property rights in the university, it appears that most lecturers are not aware of it and what it contains. To encourage them to prepare study course units, lecturers need to be briefed about their rights in the material they prepare. It might be important to have a clause that clearly touches on the various materials produced by DE.

9. Item S207, on “training in what DE is all about”, ranked ninth with a coefficient score of 0.99 and the mean score was 4.14. This highly corroborated what the respondents said in the open- ended section (item 15). Most of the respondents pointed out that training in DE methodology should be for all lecturers in the university. Training will enable the lecturer to get familiar with DE and its dynamics. This will enhance both the level of awareness and readiness to adopt DE. This agrees with the research findings by Gilcher and Johnstone (1989); Kirby and Garrison (1989); N.E.A. (2000); Pasmore (2003) which indicated that as instructors get more familiar with DE, and as their level of experience increases, the rate of adoption is bound to increase.
10. Item S210, on a clear policy on the level of support in form of stipend for lecturers participating in DE ranked tenth with a coefficient score of 0.079 and with a mean score of 4.09. The issue of remuneration to those who write DE course materials was pointed out by over 90% of the respondents in the open-ended section 3 items 26. Currently there is no clear policy on how much money a lecturer should be paid for writing a course unit. It is not clear to the lecturers that there exists a specific policy on remuneration. It is critical that there is a clear policy and that lecturers are consulted in the formulation of the policy. Writing a DE course unit is an opportunity cost that the lecturer, will forgo for not participating in other academic activities particularly the teaching of the evening students in which they earn extra money. To motivate the

lecturers it is important that the remuneration is set at a level that will make the lecturers feel encouraged to participate. Perhaps it would be better to include in the promotion criteria the preparation of DE course material. This should not just be implied but should be included in the policy statements.

11. Item S205, on the reduction of departmental workload to a lecturer when preparing DE material ranked eleventh with a coefficient score of 0.096 with a mean score of 4.07. One respondent from the Faculty of Education and who has participated in writing a course unit in DE said that it takes five times more time to design and prepare distance material as compared to a regular course. Many other respondents made the same comment in the open-ended section of the questionnaire. Other studies (Betts, 1998; Dillon and Wash, 1992; Eisenburg, 1998) have pointed out that the time the lecturers take to translate their teaching materials into DE format hinders them from participating in DE especially when the extra work is not rewarded by promotion or remuneration.
12. Item S201, on the maintenance of student-teacher interactivity in a DE course ranked twelfth with a coefficient score of 0.128 with a mean score 4.03. The respondents seemed to be concerned about the loss of interaction between them and the students when courses are offered by distance modes. This was particularly observed in the "hard" sciences. In the open-ended section, several lecturers from the Faculty of Engineering and the Faculty of Science were concerned on how the teacher student relationship could be maintained especially in a practical which requires the presence of the teacher - student in time and space. Lori (2003) had the same observation that the "old" and tenured lecturers feel that DE separates them from the learners and this is not something that they feel comfortable about. This is a major challenge facing distance education particularly the print-based mode of instructional delivery. The E-Learning mode might help to militate against it because it is possible for the teacher and the student to interact in time through the bulletin boards, e-mail, audio conferencing or video conferencing.

13. Item S 213 on the issue of moral support from colleagues while participating in DE ranked thirteenth with a coefficient score of 0.068 and a mean score of 4.00. Moral support was important to the respondents as a way of encouragement. This means that the moral support from colleagues is an important motivating factor to them.

14. Item S214 on the issue of encouragement from colleagues while participating in DE ranked fourteenth with a coefficient score of 0.076 and a mean score of 3.95. The support from peers is important in the adoption process. Respondents indicated that support from their colleagues was important. This is because the peers act as role models and can share their experiences with them. In a study by Williams (2001), 63% of the respondents indicated that they would like more lecture showcases in instructional technology that demonstrated real-world application in the classroom. Parisot (1997) also concluded that role modelling was a primary motivational factor in the adoption and diffusion of technology.

There were other factors inhibiting lecturers' readiness to adopt the use of ICT in DE that were mentioned in the open-ended item 15. They included the negative attitude towards DE by the lecturers' colleagues, poor entry grades of the students and heavier workloads. The main motivating factors mentioned in the open-ended section included the fact that DE will help access education to more people and that the lecturers who participated in the DE training programmes were able to better their teaching skills. These findings agree with studies conducted by Betts (1998); Clark (1993); Kaiser (1998) and Moore (1997).

4.14. Lecturers' Attitude Towards Distance Education.

4.14.0 Introduction

This chapter is a descriptive analysis of the data from section 3 of the survey. One objective of the study was to establish the attitude the University of Nairobi lecturers have towards the adoption of DE. The study hypothesized that the University of Nairobi lecturers have a negative attitude towards the adoption of DE. To test this hypothesis, the respondents were given 25 issues in which they were supposed to indicate whether they "strongly agree", "agree", are "uncertain", "disagree", "strongly disagree", or "not applicable" to each of the 25 statements. The following was the score of the scales: "strongly agree"=5; "agree"= 4; "uncertain"=3; "disagree"=2; "strongly disagree"=1 and "not applicable"=0. A score above 3.5(the mean score of "uncertain"=3 and "agree"=4) was considered as positive or supportive, while a score below 3.5 was considered negative or not supportive.

4.14.1 Descriptive Analysis of Attitude the Lecturers have Towards DE

The mean, the variance and standard deviation were selected for descriptive statistics. The mean scores of the 25 items for the university was 3.63 (the standard deviation was 1.244 and the variance 1.547), indicating that the respondents were supportive (positive) towards DE. Table 6.2 shows the descriptive statistics of the respondents' attitude towards DE. The results indicated that 60.7% of the respondents either "agreed" or "strongly agreed" with the statements. Over twenty one percent (21.2%) indicated that they either "disagreed" or "strongly disagreed" with the statements. Eighteen percent (18.1%) were "uncertain" about the statements. The frequencies are shown in Table 6.1.

Table 4.18: Frequencies of the lecturers' attitude towards DE per scale

SCALE	FREQUENCY	%	VALID %	CUMULATIVE %
Strongly disagree	301	6.9	6.9	6.9
Disagree	619	14.3	14.3	21.2
Uncertain	785	18.1	18.1	39.3
Agree	1304	30.1	30.1	69.4
Strongly agree	1325	30.6	30.6	100
Total	4334	100	100	

4.14.2 Lecturers' Attitude Towards DE per College

Table 6.2 indicates the mean score of the respondents' attitude towards the adoption of DE per the colleges. The results indicate that only CAVS (with 3.40 attitude mean score) had a mean score of less than 3.5. This implies that respondents at CAVS had a negative attitude towards the adoption of DE. The rest of the colleges had attitude mean score of above 3.5 meaning that they have a positive attitude towards the adoption of DE.

Table 4.19: Descriptive statistics of the respondents' attitude towards DE

COLLEGE	MEAN	MEDIAN	MODE	STANDARD DEVIATION	VARIANCE	n
CEES	3.81	4.00	5	1.203	1.448	53
CAVS	3.40	3.50	4	1.242	1.543	16
CHS	3.64	4.00	5	1.263	1.596	15
CHSS	4.00	4.00	5	1.258	1.582	39
CAE	4.00	4.00	4	1.318	1.738	28
CPBH	4.00	4.00	4	1.179	1.390	38
UoN	3.63	4.00	5	1.244	1.547	189

4.14.3. Lecturers' Attitude Towards each of the 25 Items in Section 3 of the Questionnaire

Table 6.3 indicates the attitude mean score per each of the 25 items given to the respondents.

Table: 4.20: The attitude means score per item (factor)

FACTOR	MEAN SCORE	STD. DEVIATION	VARIANCE	REMARKS
S301	3.43	1.244	1.547	NEGATIVE
S302	4.24	0.759	0.576	POSITIVE
S303	4.42	0.715	0.511	POSITIVE
S304	3.48	1.053	1.109	NEGATIVE
S305	2.48	1.223	1.495	NEGATIVE
S306	3.76	1.285	1.650	POSITIVE
S307	3.30	1.229	1.510	NEGATIVE
S308	3.12	1.259	1.586	NEGATIVE
S309	3.20	1.258	1.584	NEGATIVE
S310	3.41	1.157	1.339	NEGATIVE
S311	3.04	1.316	1.732	NEGATIVE
S312	2.91	1.375	1.891	NEGATIVE
S313	3.47	1.240	1.537	NEGATIVE
S314	4.04	1.093	1.195	POSITIVE
S315	4.37	0.757	0.573	POSITIVE
S316	4.38	1.002	1.003	POSITIVE
S317	3.59	1.344	1.807	POSITIVE
S318	3.64	1.406	1.976	POSITIVE
S319	3.45	1.464	2.142	NEGATIVE
S320	4.38	0.935	0.874	POSITIVE
S321	4.19	1.137	1.293	POSITIVE
S322	3.72	1.564	2.445	POSITIVE
S323	3.35	1.450	2.102	NEGATIVE

S324	4.23	1.193	1.424	POSITIVE
S325	4.34	0.952	0.906	POSITIVE
<i>Mean score</i>	<i>3.63</i>	<i>1.244</i>	<i>1.547</i>	<i>POSITIVE</i>

To obtain the dividing point between “negative attitude “ and “positive attitude”, a mean score of the “agree” scale and the “uncertain” scale was calculated $(4.0+3.0)/2=3.5$). Any factor (item) that had an attitude mean score of less than 3.5 was regarded to be negative. Any factor that had an attitude score of more than 3.5 was regarded to be positive.

Each of the items was also analyzed using Principal Axis Factoring (PAF). Varimax with Kaiser Normalization Rotational method was employed and items were scored using Anderson-Rubin method. Out of the analysis, it was observed that an item had either positive or negative coefficient scores, indicating whether the lecturers had a negative or positive attitude towards it.

A coefficient component score of between 0 and 1 was an indicator of positive (supportive) attitude towards the adoption of DE. A coefficient score of between 0 and -1 was an indicator of negative (not supportive) attitude towards the adoption of DE. A coefficient score of 0 was an indicator of neutrality (lukewarm) attitude towards the adoption of DE. The strength of the coefficients indicated the degree of the attitude towards the specific issue.

Interpretation of the negatively scored items of Section 3 of the Questionnaire

The following is the interpretation of each of the 12 negatively scored factors (items) in section 3 of the survey. Table 6.4 here below indicates the component coefficient score of each of the 12 factors.

Table 4.21: The ranking of the negatively scored factors

ITEM (FACTOR)	MEAN SCORE	COMPONENT COEFFICIENT SCORE	RANKING (FROM THE HIGHEST TO THE LOWEST)
S304	3.48	-0.002	1
S313	3.47	0.004	2
S319	3.45	-0.048	3
S301	3.43	-0.10	4
S310	3.41	0.40	5
S323	3.35	-0.106	6
S309	3.20	-0.077	7
S308	3.12	-0.073	8
S311	3.04	-0.116	9
S312	2.91	-0.147	10
S305	2.48	-0.179	11

- (1) In item S301, on whether distance education is an effective mode of delivery, the mean score was 3.43 (below 3.5 and hence negative) and factor component coefficient score -0.10. Meaning that the respondents feel that DE is not an effective and acceptable mode of delivery. Some respondents particularly from the “hard sciences” stated that DE is appropriate for theoretical courses and not good for practical oriented courses in sciences.
- (2) In item S304, on whether there is a difference in examination performance between regular students and distance education, the mean score was 3.48 (slightly below 3.5 and hence negative) and factor component coefficient -0.002, meaning that respondents feel that there is a difference in exam performance between the regular and distance students.

- (3) In item S305, on whether it takes a lecturer a lot of time to write distance learning material, the mean score was 2.48 (below 3.5 and hence negative) and component coefficient score was -0.179. Meaning that they feel that it takes a lot of time to write DE course material.
- (4) In item S308, on whether a lecturer has complete control on the course they have written, the mean score was 3.12 (below 3.5 hence negative) and the factor component coefficient was -0.073, meaning they feel that they have no control over the DE course material they write. This was emphasized in the open-ended item 26 by majority of the respondents in the various faculties
- (5) In item S309, on whether examination cheating is more a threat in DE than in a regular course, the score mean score was 3.20 (below 3.5 hence negative) and the factor component coefficient was -0.077. This suggests that the respondents feel that examination cheating is more of a threat in DE than in a regular course.
- (6) Item S311, on whether the lecturers' time commitment is not greater in DE than in a regular course, the mean score was 3.04 (below 3.5 and hence negative) and the factor component coefficient score was -0.116. This implies that the respondents felt that a DE material requires more time to prepare compared to teaching material for a regular (face-to-face) course.
- (7) In item S312, on whether distance education is appropriate for all courses, the mean score was 2.91 (below 3.5 hence negative), meaning that the respondents feel that DE is not appropriate to all courses.
- (8) In item S313, on whether DE courses offer the same quality of learning like in a regular course, the mean score was 3.47 coefficient

score was 0.004, meaning they feel that DE is of equal quality. However, the feeling is relatively low bending towards zero.

(9) In item S310, on whether it is easy for a lecturer to discuss with the learner course content, course quality, and the mean score was 3.41 and a component coefficient score was, 0.40, meaning they feel that such discussion is difficult.

(10) In item S319, on whether the university offers adequate stipend to those who write DE material, the mean score was 3.45 (below 3.5 and hence negative) and the factor component coefficient score was -0.048, meaning that they feel the university does not offer adequate stipends.

(11) In item 323, on whether there is adequate DE technical support to handle ICT technology and equipment in DE, the mean score was 3.35 (below 3.5 hence negative) and the factor component coefficient score was -0.106, meaning that they feel that there is no adequate DE technical support to handle ICT in DE activities.

(12) In item S307, on whether there is interaction between teacher and student in DE, the score was 0.10 the mean score was 3.30 (below 3.5 hence negative) meaning that the lecturers feel that there is interaction between the lecturer and the student in DE courses. Lori (2003) says that live interactions that exist in a classroom where non-verbal can be measured instantaneously, the capturing of the attention of all students at the same time, the ability to answer questions immediately and without delay are some of the challenges for seasoned traditional lecturers who thrive in a classroom environment. Those lecturers who teach DE students during their face-to-face interaction have had some interactivity with the students. Mackenzie's (1999) study found that lecturers preferred a combination of face-to-face and on-line instruction because the advantages of both formats can be realized

when they are used. Apparently, this appears to be the case with UoN lecturers.

Interpretation of the positively scored items of the questionnaire

The following is the interpretation of the 13 positively scored factors (items) in section 3 of the survey. Table 6.5 indicates the component coefficient score of each of the factors.

Table 4.22: The ranking of the positively scored attitude factors

ITEM (FACTOR)	MEAN SCORE	COMPONENT SCORE COEFFICIENT	RANKING
S303	4.42	0.10	1
S316	4.38	0.219	2
S320	4.38	0.201	3
S315	4.37	0.206	4
S325	4.34	0.154	5
S302	4.24	0.192	6
S324	4.23	0.214	7
S321	4.19	0.167	8
S314	4.04	0.034	9
S306	3.76	-0.057	10
S322	3.72	-0.105	11
S318	3.64	-0.052	12
S 317	3.59	-0.049	13

1. In item S302, on whether DE is an effective and acceptable mode of teaching, the mean score was 4.24 and the factor component coefficient score was, 0.192, meaning that the lecturers feel that DE is an effective and acceptable mode of teaching.

2. In item S 303, on whether all lecturers should be trained in DE, the mean score was 4.42 and the factor component coefficient score was, 0.122, meaning the respondents support that lecturers should be trained in DE methodologies.
3. In item 314, on whether all lecturers should be trained in DE methods, the mean score were 4.04 and the component coefficient score was 0.034, meaning that the respondents support that all lecturers should be trained in DE methods. Perhaps what needs to be understood is that both social status issues and effective response to training (anxiety, fear, conflict related to cognitive dissonance) should be handled carefully.
4. In item S315, on whether they would encourage their colleagues to participate in e-learning, the mean score was 4.37 and the factor component coefficient score was 0.20, meaning that the respondents support the idea their colleagues should get involved in e-learning. The findings do not agree with Cravener's (1999), conclusions, which indicated that senior faculty members declined to participate in technology training because of lack of confidence. All respondents irrespective of their age or tenure, indicated they are willing to be trained in e-learning in this study.
5. Item S316, on whether they would be ready to participate in further DE training, the mean score was 4.38 and the factor component coefficient score was 0.219, meaning that all the respondents were willing to undergo further training in DE.
6. In item S320, on whether a clear policy on ODL would facilitate adoption of DE, the mean score 4.38 and the factor component coefficient score was 0.201, meaning that the respondents feel that a clear policy on DE is critical for the adoption of DE.

7. In item S324, on whether they are ready to receive further training in DE, the mean score was 4.23 and the component coefficient score was 0.214, meaning that the respondents are ready for further training.
8. In item 321, on whether training in DE teaching methods would facilitate adoption of ICT in DE the mean score was 4.19 and the factor component coefficient score was 0.167, meaning that the respondents support training in DE teaching methods.
9. In item S322, on whether provision of facilities and equipment is a major concern to them, the mean score was 3.72 and the factor component coefficient score was 0.105, meaning that the respondents feel that provision of facilities and equipment is a major concern for their participation in DE.
10. In item S318, on whether the university offers an adequate incentive to lecturers to participate in DE the mean score was 3.64 (almost equal to the university mean score) and the factor component coefficient score was -0.052, meaning that the respondents feel that the university does not offer adequate incentives. Once again, this was mentioned by virtually all the respondents in the open-ended section.
11. In item S317, on whether the university offers promotion opportunities to lecturers who participate in DE activities, the mean score were 3.59(almost at the cut point) and the factor component coefficient score was -0.049, meaning that the respondents feel the university does not offer the opportunities.
12. In item S306, on whether they would support programmes in their department to be offered by distance, the score was -0.057, meaning that the respondents would not support DE programmes to be offered in their departments.

4.14.4 Testing of Hypothesis on Lecturers' Attitude Towards the Adoption of DE

As stated earlier, one of the objectives of the study was to establish the attitude the University of Nairobi lecturers have towards the adoption of DE. The study hypothesized that the University of Nairobi lecturers have a negative attitude towards the adoption of DE. Another related objective was to establish whether there is any significant difference in attitude towards the adoption of DE between the university colleges. It also hypothesized that there are no mean differences between the University of Nairobi colleges in the attitude towards the adoption of DE. Each of the two objectives was achieved by testing the two hypotheses.

Testing hypothesis No. 1, on whether the attitude towards the adoption of DE is negative

The following hypothesis was stated to test whether the University of Nairobi lecturers' attitude towards the adoption of DE is negative:

H₀: There is no evidence of supportive attitude of the University of Nairobi lecturers' towards DE.

H₁: The University of Nairobi lecturers' attitude towards DE is positive (supportive).

To test this hypothesis, the attitude mean scores of all the colleges were compared. A t-test was computed at 95% confidence level. A test value was placed at $t=3.5$, $P<0.05$. The university attitude towards DE mean scores was 3.63. Therefore, the null hypothesis is rejected and the alternative accepted. We can, therefore, conclude that the University of Nairobi lecturers' attitude towards DE is positive (supportive).

Testing hypothesis No.2, on whether there is any significant difference in the attitude towards the adoption of DE between the University Colleges

The following hypothesis was stated to test whether there is any significant difference in the attitude towards the adoption of DE between the university colleges.

H₀: The lectures' attitude towards DE differs according to University of Nairobi colleges (disciplines).

H_A: The lecturers' attitude towards DE does not differ according to University of Nairobi colleges (disciplines).

The confidence level was set at 95%. The universities mean scores was at 3.63. The following were the mean differences: CESS, 3.81; CAVS, 3.40; CHS, 3.64; CHSS, 3.63; CAE, 3.43; CPBS, 3.67. A t-test was conducted and the results are as shown in Table 6.5. The results indicated that there was significant difference in the attitude mean scores between the colleges. Therefore, we do not reject the null hypothesis but accept the alternative. We then conclude that lecturers' attitude towards DE does differ significantly according to University of Nairobi colleges.

Table 4.23. Test results of the mean score differences of attitude towards the adoption of DE between the University of Nairobi Colleges.

COLLEGE	T	DF	SIG (2- TAILED)	MEAN DIFFERENCES	LOWER	UPPER
CEES	5.363	1255	0.000	0.018	0.12	0.25
CAVS	2.932	255	0.004	0.23	-0.38	-1.07
CHS	0.175	249	0.861	0.01	-0.14	0.17
CHSS	0.048	948	0.962	0.00	-0.08	0.08
CAE	-	619	0.000	-0.20	-0.31	-0.10

	3.826					
CBPS	1.000	940	0.318	0.04	-0.04	0.11
UoN						

4.14.5. Lecturers' Support for the use of E-learning

As mentioned above, e-learning is increasingly becoming a major instructional delivery method in distance education. One of the objectives of the study was to establish whether the University of Nairobi lecturers support the use of e-learning as a method of distance teaching. The study hypothesized that the lecturers do not support the use of E-Learning in teaching. Section 3 item 15 asked the respondents to state whether they would encourage their colleagues to participate in the use of e-learning in teaching. The mean score of the item for the university was 4.39. The results are indicated in Table 6.7. This implies that the lecturers would strongly encourage their colleagues to participate in the use of e-learning for instructional purposes. This is an indicator of the fact that lecturers are already aware of the increasing importance and use of e-learning in distance education. Table 6.7 shows the mean score for item 15.

Table 4.24: Descriptive statistics on whether the respondents would encourage their colleagues to use e-learning in DE

COLLEGE	MEAN	STANDARD DEVIATION	VARIANCE	N
CEES	4.51	0.869	0.755	53
CAVS	3.56	1.094	1.196	16
CHS	3.60	1.242	1.543	15
CHSS	4.13	1.005	1.009	39
CAE	4.11	1.100	1.210	28
CPBH	4.53	0.725	0.526	38
UoN	4.39	0.770	0.593	189

Testing hypothesis No.3 (a) on whether the University of Nairobi lecturers support the use of e-learning in teaching

H₀: The university of Nairobi lecturers do not support the use of E-learning as a method of teaching.

H_A: The University of Nairobi lecturers support the use of E-learning as a method of teaching.

This hypothesis was tested at 95% confidence level ($t=3.5, p < 0.05$). The university mean for the support of E-learning score was 4.37. Therefore we reject the null and conclude that the University of Nairobi lecturers support the use of e-learning as a teaching method.

4.14.6 Testing hypothesis No.3 (b), on the issue of encouraging colleagues to Use e-learning

To test whether there is any significant difference between the mean scores of the colleges on whether the lecturers would encourage their colleagues to use E-learning in teaching, the following hypothesis was tested.

H₀: There is no difference in the mean score of the University of Nairobi colleges on the issue that they would encourage their colleagues to use e-learning in DE.

H_A: There is a difference in the mean score of the University of Nairobi colleges on the issue that they would encourage their colleagues to use e-learning in DE.

This hypothesis was tested using ANOVA and at 0.05 level of significance. The university means score for item 15 was 4.44. The critical test values were ($t=4.44, p < 0.05$). Table 6.7 indicates the result, which shows that there are significant differences between the university colleges on whether the lecturers would encourage their colleagues to use e-learning as a method of teaching. Hence we reject the null hypothesis and conclude that there is significant difference in whether the lecturers from the various colleges would encourage their colleagues to use e-learning.

Table 4.25: Hypothesis testing on whether there is a difference in the mean score on the issue of encouraging their colleagues to use e-learning in DE between the colleges.

COLLEGE	T	DF	MEAN	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	0.582	52	4.51	0.563	0.07
CAVS	-3.210	15	3.56	0.006	-0.88
CHS	-2.619	14	3.60	0.020	-0.84
CHSS	-1.938	38	4.13	0.060	-0.31
CAE	-1.601	27	4.11	0.121	-0.33
CPBH	0.733	37	4.53	0.468	0.09
UoN	-0.080	188	4.39	0.936	0.00

Lecturers at CAVS and CHS scored 3.56 and 3.60 respectively implying that they are the least prepared to encourage their colleagues to use e-learning for teaching.

4.15. Discussions and Conclusions

The questionnaire had a high reliability and therefore adequate and relevant in measuring the various constructs in the variables. The three sections had Cronbach Alpha of 0.912, 0.977 and 0.89 respectively. The questionnaire rate of return (63.64%) was also adequate for analysis. All colleges had over 50% rates of response except CAVS which had 38.10%. The highest rates of return were in CEES (73.61%), CBPS (77.55%) and CAE (82.32%). The two colleges CEES and CBPS are already highly engaged in distance education activities. The relative exceptional response rate from CAE can be explained by the fact that the respondents indicated that they are interested in DE because they feel that it is the avenue through which the college can boost its enrollments.

In terms of tenure status, it is observable that CEES had the highest percentage of part-time (58.49%) respondents and only 41.51% full-time respondents. At the same time CEES has a high percentage of the non-tenured lecturers. This is not unique

because distance education highly depends on services of part-time staff with a skeleton of permanent staff.

It is observable that 65.08% of the respondents had six or more years of teaching experience and 34.92% with less. Once again, 56.6% of the respondents from CEES had less than six years of teaching experience. This is relatively a high percentage compared to the other colleges. However, this can be explained by the fact that most of the lecturers at CEES are part-time lecturers who are looking for teaching vacancies in the university. Due to its nature of operations, CEES attracts many young lecturers who are interested in teaching on part-time basis.

The level of computer literacy in the university appears to be high. Over 79.89% of the respondents were computer literate while only about 20% were not. In terms of computer availability, over 59.3% have access to a computer in office while 40.7% do not have. However, 76.72% of the respondents had a computer at their home and only 23.28% did not have. On the issue of readiness to be trained in e-learning, 87.3% indicated that they were ready while only 12.7 % were not interested. We can, therefore, conclude that the University of Nairobi lecturers are prepared and ready to engage in the use of ICT in teaching. What needs to be done is to train the lecturers on how to effectively use ICT in teaching. This requires training in pedagogical and andragogical skills. The chapter provided the data input for chapters 5,6,7 and 8.

The results of the analysis of the factors that influence lecturers' participation in DE in other institutions of higher learning clearly indicate that these factors are also important to the University of Nairobi lecturers. It is evident that there is no difference in the mean scores of the factors that influence lecturers' participation in DE between the University of Nairobi colleges. Finally, it is observable that the factors can be ranked in terms of their importance and therefore, can be tackled in terms of their priority to the lecturers. If this approach is applied, the rate of adopting DE will be enhanced. From the discussion on the factors, it is apparent that there is congruence between the University of Nairobi respondents and those from other studies conducted in other universities

The result of the analysis of University of Nairobi lecturers' attitude towards the adoption of DE indicates that attitude is positive. This implies that lecturers are willing to participate in DE activities. It is also clear that there is no significant difference in the attitude towards the adoption of DE between the university colleges (disciplines). Lecturers are ready to encourage their colleagues to use (ICT) e-learning as a method of distance teaching. The results indicate that there is no significant difference in the support the respondents would give in the use of e-learning between the respondents from the university colleges. A full discussion on the findings is in chapter 9 of this thesis. This chapter provided the data input for chapter 7 which focused on generating and analysing the main issues that would influence the lecturers' readiness to adopt DE and use ICT in teaching.

CHAPTER FIVE

ANALYSIS OF THE MAIN ISSUES OF CONCERN TO LECTURES' PARTICIPATION IN DISTANCE EDUCATION (QUANTITATIVE ANALYSIS AND FINDINGS)

5.1.0 Introduction

The study had 10 main issues that were considered critical in the adoption of DE in the University of Nairobi. The main issues and items that measured them are in Table 7.1. The mean score was measured relative to a set mean score of 3.5.

On the first issue which was on the acceptances of DE, the mean score was 4.0 and hence above the average university mean score of 3.63. This implies that the lecturers accept the fact that that DE is a viable instructional delivery mode. The second issue was on the worthiness of DE. The mean score was 3.34. The implication is that the lecturers think that DE is not worthy. This implies that DE is not overwhelmingly appreciated by all lectures. The third issue was on the psychological readiness to adopt DE. The mean score was 4.48. The universities mean score was 3.63. The implication is that the lecturers are psychologically ready to adopt DE. The fourth issue was on the importance the respondents attach on training in DE. The mean score was 4.11. This implies that the lecturers regard training in DE to be important for their adoption of DE. The fifth issue was on the need to formulate an ODL policy to facilitate its implementation. The mean score was 4.48. This implies that the lecturers regard the formulation of a DE policy critical for their participation in DE's activities. The sixth issue was on the support the university gives to the lecturers participating in DE. The mean score was 3.74. The implication is that the lecturers feel that the university administrators give some support. However, the relatively low mean score is an indication of the lecturers' apprehension of the level of support they receive from the administrators. The seventh issue was on whether the university has an intellectual property rights policy. The mean score was 2.963. The obvious

implication is that the lecturers feel that the university does not have in place a policy on intellectual property rights especially on DE. This appears to be a major factor that would inhibit lecturers from participating in DE. The eighth issue on the efforts the lecturers put in preparing DE materials. The mean score was 2.04. This suggests that the lecturers feel that they need a lot of effort to prepare DE course materials. The ninth issue was on the time commitment a lecturer has to put in when preparing the DE materials. The score was 2.81 also implying that they feel that DE requires a lot of time commitment particularly on the translation of teaching materials in DE format. The tenth issues on whether they feel that the university provides enough incentives to those participating in DE, the mean score was 3.33. This implies that the lecturers feel that the university does not provide enough incentives to those participating in DE.

Table 5.1: Analysis of the results of the main issues in the adoption of DE

Serial No.	issue	Measuring item in section 3	Mean score	Interpretation
1	Acceptance of DE	1,2,12,15,3,25,6	4.0	Acceptance is high
	Access to ICT		4.37	Access is high
2.	Worthiness of DE	4,7,10,13,14,9	3.34	Worthiness is not highly rated
3.	Readiness to adopt DE	16,2	4.48	Lecturers are very ready to adopt DE
4	Importance of training in DE	21	4.11	Training in DE very important
5	Need for an ODL policy	20	4.48	Highly needed
6	Support from the university administrators	22,23	3.74	Somehow supportive
7	Intellectual property rights	8	2.96	Rights not protected
8	Efforts while preparing materials	5	2.81	DE requires a lot of effort to prepare
9.	Time commitment in DE activities	11	2.81	DE requires a lot of time to prepare
10.	Incentives to participate in DE	18	3.33	University gives some incentives though not adequate

5.1.1 Testing hypothesis on lecturers' readiness to adopt DE

The adoption of DE as an instructional delivery mode depends heavily on the lecturers' state of readiness. The assumption is that the higher the level of readiness, the higher the rate of adoption. At the same time, we know that people do not adopt a new thing or idea at the same rate. Rogers' (1995) theory of Innovation Diffusion says that there are four types of adopters: the innovators (2.5%); early adopters (13.5%); the early majority (34%); the late majority (34%) and the laggards (16%). The individuals within a social system do not adopt an innovation at the same time. Rather, they adopt it in an over-time sequence, so that individuals can be classified into adopter categories on the basis on which they first begin using the idea. University of Nairobi has six colleges organized in broad disciplines. It was important to test whether there is any difference in the state of readiness to adopt DE between the various colleges.

Lecturers' readiness to adopt DE as an instructional delivery mode was the dependent variable. It was measured by item 16 and 24 of section 3 of the survey. A mean score 3.0 of the two items would indicate that the lecturers are ready to adopt DE as an instructional delivery mode. A mean score of less than 3.0 would indicate that the lecturers are not ready to adopt DE as an instructional delivery mode. The mean score of the two items for the university was 4.48. This implies that the lecturers are ready to adopt DE. However, it was important to test whether there is any difference in readiness to adopt DE by the university colleges. Hypothesis 8 was to test this hypothesis. The results are indicated here below.

5.1.2 Testing hypothesis on whether there is significant differences between the university colleges on readiness to adopt DE (hypothesis nos. 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16)

Objectives no. 6 of the study aim was to establish whether there is any significant difference in the readiness to adopt DE between the University of Nairobi colleges. To achieve the objective the following hypothesis was tested.

H₀: There is no difference in the readiness to adopt DE mean score between the University of Nairobi colleges.

H_A: There is a difference in the readiness to adopt DE between the university colleges.

The test value was set at 4.48 mean score and the confidence level at 95%. The university means score for readiness to adopt DE was at 4.48. The following was the mean scores for the colleges: CESS, 4.62; CAVS, 4.45; CHS, 4.45; CHSS, 4.49; CAE, 4.18; CPBS, 4.50. The lower scale had a mean score of 4.45 and the upper scale had a limit of 4.78($t=4.48$, $P<0.05$). Table 7.2 shows the results of the analysis and the results indicated that there were significant differences in the attitude mean scores between the colleges. Hence, we reject the null hypothesis. Therefore, we conclude that there is significant difference in readiness to adopt DE between the University of Nairobi colleges. Table 7.2 Shows the results of the hypothesis testing.

Table 5.2: Test results of mean differences of readiness to adopt DE between the colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	1.679	93	0.096	0.14
CAVS	-0.177	19	0.862	-0.03
CAE	-2.157	49	0.036	-0.30
CHS	-0.200	21	0.843	-0.03
CHSS	0.074	75	0.941	0.01
CPBS	0.243	73	0.808	0.02
UoN	-0.087	335	0.931	0.00

From the data analysis and as can be observed in Table 8 above, the respondents had different ratings for the ten issues.

Testing hypothesis No.7 on lecturers' acceptance of DE

Acceptance of DE is critical to the adoption of DE. This was measured by items 1, 2, and 12, 15, 3, 25, 6 in section 3 of the questionnaire. A hypothesis testing was done to test whether there was significant difference in the mean scores of the issue of acceptance of DE between the various colleges. The hypothesis was stated as follows:

H₀: There is no significant difference in the mean scores on the issue of acceptance of DE between the colleges.

H_A: There is a significant difference in the mean score on the issue of acceptance of DE between the colleges.

The test value was set at 4.0 which the university means score of issue. The results (t=4.0, P<0.05) are shown in table 7.3 indicates that there is a significant difference between the means of the colleges. Therefore, we do not reject the null hypothesis and conclude that there is a significant difference between the colleges. It is noticeable that CEES and CPBS have positive scores while the other colleges have negative scores. The two colleges have operational distance learning programmes. Generally, the lecturers have already accepted to adopt DE. Some of the lecturers have already been trained in DE and have translated their course materials in print or/and e-learning formats.

Table 5.3: Hypothesis testing on whether there is a difference in the mean score on acceptance of DE between the University of Nairobi colleges

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	4.915	315	.000	.28
CAVS	-2.714	70	.008	-.37
CHS	-3.457	173	.001	-.36
CHSS	-0.883	76	.380	-.13
CAE	-2.85	263	.776	-.02
CPBS	1.302	249	.194	.08

<i>UoN</i>	<i>0.129</i>	<i>1151</i>	<i>.897</i>	<i>.00</i>
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Testing hypothesis No.8 on worthiness of DE

For the lecturers to adopt DE they need to feel that it is worth. Items 4, 7, 10, 13,14,9 of section 3 of the questionnaire measured the worthiness of DE to the lecturers. It was important to test whether there was significant difference in the mean score of the issue between the colleges. The following hypothesis was set:

H₀: There is no difference on the mean score on the issue of worthiness of DE between the university colleges. H_A: There is a difference in the mean score on the issue of worthiness of DE between the colleges.

The test value was set at 3.34. The results ($t=3.34$, $P<0.05$), indicate that there is significant difference in the mean score on worthiness of DE between the colleges. We reject the null hypothesis and conclude that there are differences in the worthiness the lecturers attach to DE between the university colleges. Table 7.4 shows the results.

Table5.4: Hypothesis testing on whether there is a difference in the mean score on the worthiness of DE between the University of Nairobi colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	4.610	256	.000	.34
CAVS	-3.545	59	.001	-.49
CHS	-3.959	147	.000	-.39
CHSS	-0.673	65	.503	-.10
CAE	-3.089	236	.002	-.23
CPBS	3.967	227	.000	.25
<i>UoN</i>	<i>-0.126</i>	<i>995</i>	<i>.900</i>	<i>.00</i>

Testing hypothesis No. 10 on the importance of training in DE

The lecturers were requested to indicate what they felt about the importance of training in DE. This was measured by item 21 of section 3 of the questionnaire. The following hypothesis was set:

- H₀: There is no difference on the mean score on the issue of importance of DE training between the colleges.*
- H_A: There is a difference in the mean score on the issue of importance of DE training between the colleges.*

The test value was set at 4.11. The results (t=4.11, P<0.05), indicate that there was significant difference in the mean score on importance of DE training between the colleges. We reject the null hypothesis and conclude that there are differences in importance attached to DE training between colleges. Table 7.5 shows the results.

Table5.5: Hypothesis testing on whether there is a difference in the mean score on importance of DE training between the University of Nairobi colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	3.957	46	0.000	0.36
CAVS	-0.036	9	0.972	-0.01
CAE	2.255	23	0.034	0.26
CHS	1.248	10	0.241	0.25
CHSS	4.828	37	0.000	0.47
CPBS	0.682	36	0.499	0.11
UoN	-0.031	185	0.976	0.00

Testing Hypothesis No. 11 on the Need to Formulate an Open and Distance Learning Policy

Though the university has been operating courses for a long time, it does not have a clear policy framework for its operationalization. Items 20 of section 3 of the questionnaire measured whether the lecturers feel that an ODL policy was important for them to adopt DE. The following hypothesis was set:

- H₀: There is no difference in the mean score on the issue of formulation of a University policy on DE between the colleges.*
- H_A: There is a difference in the mean score on the issue of a university policy on DE between the colleges.*

The test value was set at 4.48. The results (t=4.48, P<0.05), indicate that there is significant difference in the mean score on importance of DE training between the colleges. We reject the null hypothesis and conclude that there are significant differences in the need to formulate a university DE policy between colleges. Table 8.6 shows the results.

Table 5.6: Hypothesis testing on whether there is a difference in the mean score on the issue of formulating a university DE policy between the University of Nairobi colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	-0.109	46	0.913	-0.01
CAVS	0.735	9	0.481	0.12
CAE	-0.693	24	0.495	-0.08
CHS	-1.063	10	0.313	-0.021
CHSS	0.845	37	0.403	-0.10
CPBS	-0.409	37	0.685	-0.06
UoN	-0.068	167	0.946	0.00

Testing hypothesis No.12, on the issue of support received from the university administrators

The support (moral and materially) provided to the lecturers while participating in DE is of great value to them. Items 22 and 23 measured the value the lecturers attach to such support. The following hypothesis was set to test whether there is any significant difference in the mean score of the items between the colleges.

H₀: There is no difference on the mean score on the issue of the support received from the university administrators between the colleges.

H_A: There is a difference in the mean score on the issue of the support received from the university administrators between the colleges.

The test value was set at 3.74 ($t=3.74$, $P<0.05$). The results indicate that there is significant difference in the mean score on the support received from the university administrators between the colleges. We reject the null hypothesis and conclude that there are significant differences in the support received from the university administrators between colleges. Table 7.7 shows the results.

Table 5.7: Hypothesis testing on whether there is a difference in the mean score on the issue of the support received from the university administrators between the University of Nairobi colleges

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	2.969	95	0.004	0.32
CAVS	-0.317	19	0.754	-0.09
CAE	-1.813	49	0.076	-0.09
CHS	-0.842	21	0.409	-0.99
CHSS	-0.132	74	0.895	-0.105
CPBS	-0.370	73	0.712	-0.42
UoN	-0.059	336	0.953	0.00

Testing hypothesis No.13, on the issue of the need to have a policy on intellectual property rights

The issue of intellectual property rights particularly on the course materials developed by the lecturers has been of serious debate. Item 8 measured the lecturers' feeling on how the university handles it. The following hypothesis tested whether there is any difference in the mean score of the item between the colleges.

H₀: There is no difference on the mean score on the issue of intellectual property rights between the colleges.

H_A: There is a difference in the mean score on the issue of the intellectual property rights between the colleges.

The test value was set at 2.93($t=2.93$, $p<0.05$). The results indicate that there is significant difference in the mean score on the issue of intellectual property rights between the colleges. We reject the null hypothesis and conclude that there are significant differences in the issue of intellectual property rights between colleges. Table 7.8 shows the results. Apparently, the colleges that have participated in the preparation and writing of DE materials seem to indicate a positive deviation from the mean score. This implies that though the lecturers who have written feel that the issue of intellectual property rights is not very well handled, there are benefits they derive from writing the DE materials that give them some other benefits. Currently, the lecturers who have written DE materials get credits for promotion. Those who have not written have not benefited, hence the significance difference between the colleges.

Table 5.8: Hypothesis testing on whether there is a difference in the mean score on the issue of intellectual property rights between the colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	0.985	46	0.330	0.16
CAVS	-1.735	9	0.117	-0.53
CAE	-1.169	24	0.254	-0.25
CHS	1.401	10	0.192	0.43
CHSS	4.545	35	0.000	0.76
CPBS	-3.730	37	0.001	-0.72
UoN	0.045	166	0.964	0.00

NB: $t=2.93$, $p<0.05$)

Testing hypothesis No. 14, on the issue of efforts required while preparing DE course materials

Designing and developing instructional course materials requires some effort from the lecturers. Item 5 of the questionnaire measured whether the lecturers felt a lot of effort is required to prepare DE course materials. The following hypothesis tested whether there is any significant difference in the mean score of the item between the colleges.

H₀: There is no difference on the mean score on the issue of the effort the lecturers put in when preparing DE materials between the colleges.

H₄: There is a difference in the mean score on the issue of the efforts the lecturers put in when preparing DE materials between the colleges.

The test value was set at 2.04 ($t=2.04$, $p<0.05$). The results indicate that there is significant difference in the mean score on the issue of the efforts the lecturers have to put in when preparing DE materials between the colleges. We reject the null hypothesis and conclude that there are significant differences on the issue of the

efforts the lecturers have to put in when preparing DE materials between colleges. Table 7.9 shows the results.

Table5.9: Hypothesis testing on whether there is a difference in the mean score on the issue of the efforts the lecturers has to put in when preparing DE materials between the colleges

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	1.997	47	0.052	0.29
CAVS	1.647	9	0.134	0.56
CAE	-1.454	24	0.159	-0.20
CHS	0.354	10	0.731	0.14
CHSS	-0.665	38	0.510	-0.09
CPBS	-2.527	36	0.016	-0.34
UoN	0.016	169	0.987	0.00

NB: t=2.04, p<0.05)

Testing hypothesis No.15, on the issue of lecturers' time commitment when preparing DE course materials

In several studies from other institutions, the lecturers indicate that to develop DE course material, a lecturer needs to commit adequate time. Item 11 measured what the lecturers felt about the time they have to commit to the development of the course materials. The following hypothesis tested whether there is any significant difference in the mean score of the item between the colleges.

H₀: There is no difference on the mean score on the issue of the lecturers' time commitment when developing DE materials between the colleges.

H_A: There is a difference in the mean score on the issue of the lecturers' time commitment when developing DE materials between the colleges.

The test value was set at 2.81(t=2.81, P<0.05). The results indicate that there was significance difference in the mean score on the issue of the lecturers' time

commitment when preparing DE materials between the university colleges. We reject the null hypothesis and conclude that there are significant differences on the issue of the lecturers' time commitment when preparing DE materials between colleges. Table 7.10 shows the results.

Table5.10: Hypothesis testing on whether there is a difference in the mean score on the issue of the lecturers' time commitment when developing DE materials colleges.

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	1.419	47	0.162	0.27
CAVS	-1.700	9	0.123	-0.51
CAE	1.191	24	0.245	0.31
CHS	1.931	9	0.086	0.59
CHSS	-0.364	38	0.718	-0.07
CPBS	-2.543	35	0.016	-0.42
UoN	0.043	171	0.966	0.00

Testing hypothesis No.16, on the issue of incentives when participating in DE activities

The issue of the incentives provided to the lecturers' who participate in DE has featured prominently in other studies. Item 18 of section 3 measured whether the lecturers feel that the university provides adequate incentives to the lecturers while participating in DE. The following hypothesis was set to test whether there is any significant difference in the mean score of the item between the colleges.

- H₀: There is no difference on the mean score on the issue of the incentives offered by the university when participating in DE activities between the colleges.*
- H_A: There is a difference in the mean score on the issue of the incentives offered by the university when participating in DE activities between the colleges.*

The test value was set at 3.33($t=2.81$, $P<0.05$). The results indicate that there was significance difference in the mean score on the issue of the incentives offered by the university while participating in DE activities between the colleges. We reject the null hypothesis and conclude that there are significant differences on the issue of incentives offered by the university while participating in DE activities between colleges. *Table 7.11 shows the results.*

Table 5.11: Hypothesis testing on whether there is a difference in the mean score on the issue of the incentives the University offers to the lecturers while participating in DE activities colleges

COLLEGE	T	DF	SIGNIFICANCE (2-TAILED)	MEAN DIFFERENCE
CEES	-1.651	141	0.101	-0.17
CAVS	-0.234	29	0.817	-0.06
CAE	1.333	74	0.187	0.19
CHS	0.025	32	0.980	0.00
CHSS	0.500	114	0.618	0.6
CPBS	0.200	111	0.842	0.02
UoN	-0.087	506	0.931	0.00

5.2 Towards Developing a Path Analysis Model for Readiness to Adopt Distance Education. (Multivariate analysis).

5.2.0 Introduction

Readiness to adopt DE depends on a number of independent variables. In this study, the main independent variables are: training in DE, knowledge of ICT use in DE, an ODL policy, support from the administrators, a policy in intellectual property rights, efforts the lecturers expect to put in while preparing DE materials, the time commitment required to translate their teaching materials into DE formats and the incentives they receive while participating in DE activities. Using a multivariate analysis, a path analysis model was developed indicating the relationship between the independent variables (the main issues of concern to lecturers for their participation in DE) and readiness to adopt distance education (the dependent variable). This involves conducting a multiple regression analysis. This is the main focus of this chapter.

5.2.1 Multivariate Analysis

A multivariate analysis was conducted to develop a path model showing how readiness to adopt DE (dependent variable) is related to the various independent variables. Multiple regressions involve the use of two or more independent variables. The model assumes that the dependent variable is linearly related to the independent variables. Table 8.1 here below shows the results of the multivariate analysis of the data. SPSS computer package was used to process the data.

Table 5.12: Analysis of the results of the main issues that concern lecturers in the adoption of DE

Independent Variables	B	Std. Error	Standardized coefficients (Beta)	T-Values	Sig.	Partial Correlations	Part Correlations
1 Constants	0.105	.400		-0.262	0.794		
2 Access to ICT	0.869	0.49	0.751	17.569	0.000	0.826	0.393
3 Importance of DE training	0.136	.095	0.082	1.439	0.152	0.119	0.032
4 ODL policy	0.024	.121	0.013	0.196	0.845	0.016	0.004
5 Support from the administration	0.081	.077	0.035	1.057	0.292	0.088	0.024
6 intellectual property rights	-0.012	.057	-0.015	-0.210	0.834	0.018	-0.005
7 Efforts in preparing DE materials	-0.144	.058	-0.154	-2.507	0.013	-0.205	-0.056
8 Lecturers' time commitment	-0.154	.061	-0.191	-2.537	0.012	-0.207	-0.057
9 Incentives to participate in DE	0.069	.114	0.038	0.609	0.543	0.051	0.014

Table 5.12 above shows the results of the multivariate analysis. Out of this analysis, it is possible to develop a path analysis of the relationships between the readiness to adopt DE (dependent variable) and the other independent variables.

For purposes of description of the model, let us use the symbols below to represent the various variables.

- READINESS TO ADOPT DE = RDE
- Training in DE=TDE
- Access to ICT= AICT
- Policy in ODL= PODL
- Support from the administration= SDE
- Intellectual property on DE policy = IPDE
- Efforts to translate ODL course materials= EDE
- Time commitment in translating ODL course materials=TCDE
- Incentives provided while participating in DE activities=IDE

Therefore, the readiness to adopt DE model can be written in the following format:

$$RDE = 0.105 + 0.082(TDE) + 0.751(AICT) + 0.013(PODL) + 0.035(SDE) - 0.015(IPDE) - 0.154 (EDE) - 0.191(TCDE) + 0.038(IDE).$$

It is observable that some variables contribute negatively, while others contribute positively to the model. The following independent variables had a positive relationship: training in DE (0.082); knowledge in the use of ICT in DE (0.75); formulation of an ODL policy (0.013); support from the administration (0.035); adequate incentives while participating in DE (0.038). The following independent variables had negative relationship: Lack of an intellectual property rights policy (-0.015); efforts in translating course materials into DE (-0.154); time commitment in translating course materials into DE formats (-0.191).

Table5.13: Model Summary

Model	R	R square	Adjusted R square	Std. Error of the estimate	R square change	F-change	Df1	Df2	Sig f. Change
1	0.963	0.928	0.924	0.240	0.928	231.997	8	144	0.000

Table 5.13 above shows the summary of the regressional model (the readiness to adopt DE model).

The standard error of the estimate was 0.240 indicating that the model is quite good in predicting how readiness to adopt DE can be forecasted using the various independent variables. The adjusted coefficient of determination (R^2) had a value of 0.924. This means that 92.4% of the change in readiness to adopt DE can be explained by the independent variables. The other unknown variables contribute a paltry 7.6% to the model. The fact that significant F is 0.000 indicates that the model is significant in predicating readiness to adopt DE given the independent variables.

Table 5.14: ANOVA for the model

MODEL	SUM	DF.	MEAN	F	SIG.
	SQUARES		SQUARE		
Regression	107.211	8	13.401	231.997	0.000
Residual	8.318	144	0.058		
Total	115.529	152			

Table 5.14 above is the ANOVA results to test whether any of the independent variables has a relationship with the dependent variable.

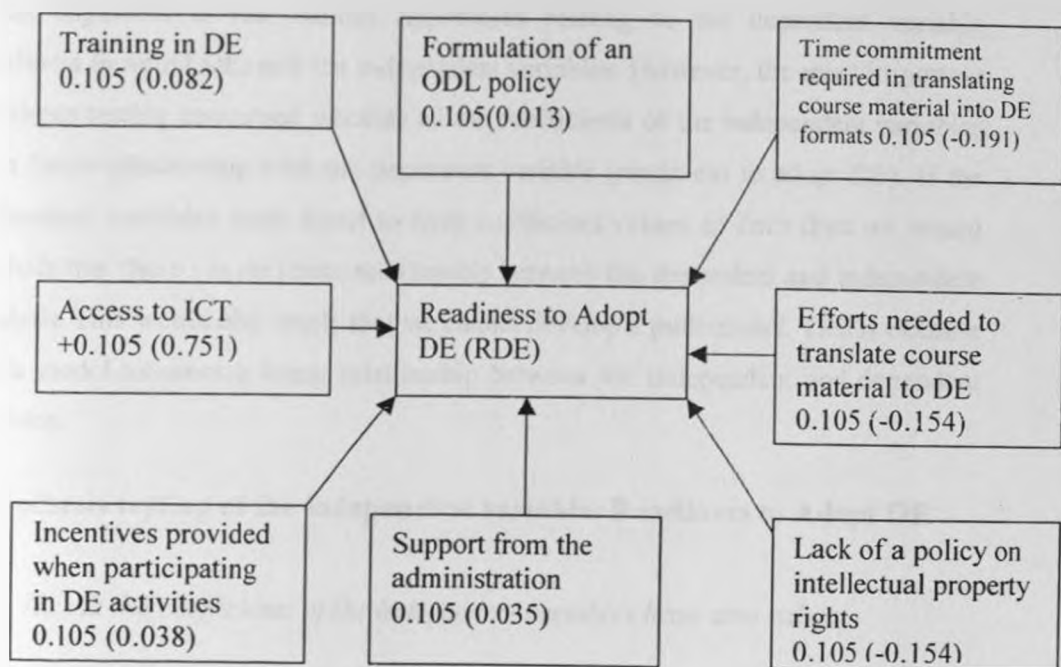


Figure 5.1: Readiness to Adopt DE Path Analysis Model

5.2.2. Testing Hypothesis No.16 on Readiness to Adopt DE Model

It was important to test various hypotheses relating to the dependent variable (Readiness to adopt DE) and the independent variables. However, the most important hypothesis testing concerned whether all the coefficients of the independent variables had a linear relationship with the dependent variable (readiness to adopt DE). If the independent variables were found to have coefficient values of Zero then we would conclude that there is no linear relationship between the dependent and independent variables. This would also imply that we cannot develop a path model. This is because a path model assumes a linear relationship between the independent and dependent variables.

Hypothesis testing of the independent variable: Readiness to Adopt DE

H₀: All the coefficients of the independent variables have zero values.

H_A: The coefficient of at least one of the independent variables is not zero.

The results of the F test at 0.05 level ($F = 231.997 > 2.93$, $p < 0.05$; reject if $F > 2.93$). The results indicate that not all of the coefficients (beta) of the independent variables are zero. Hence we reject the null hypothesis and accept the alternative hypothesis and conclude that there is a linear relationship between the dependent variable (RDE) and the independent variables (TDE, AICT, PODL, SDE, IPDE, TCDE, IDE).

Hypothesis testing: Individual partial regression coefficients of the independent variables

It was important to test whether each of the independent variables had a significant contribution to the Readiness to Adopt DE path analysis model. A t –test at 0.05 confidence level was used to test each of the following set of hypotheses. The partial regression coefficient of each of the independent variables in table 8.1 was used in the test.

(a) Access to ICT

H_0 : Access to ICT does not contribute to readiness to adopt DE.

H_A : Access to ICT contributes to readiness to adopt DE.

The results indicate that $\beta=0.751$, $t=17.569$, $p<0.05$, $t>0.751$ hence we reject the null and accept the alternative hypothesis and conclude that access to ICT would result in significant positive contribution to readiness to adopt DE.

(b) Importance of Training in DE.

H_0 : Training in DE does not contribute to readiness to adopt DE model.

H_A : Training in DE contributes to readiness to adopt DE model.

The results indicate that, $\beta=0.082$; $t=1.439$, $p<0.05$. Hence we reject the null and accept the alternative hypothesis and conclude that training in DE would result in significant positive contribution to readiness to adopt DE.

(c) Availability of a clear policy on ODL

H_0 : Formulation of a clear policy on ODL does not contribute to readiness to adopt DE model

H_A : Formulation of a clear policy on ODL contributes to readiness to adopt DE model.

The results indicate that, $\beta=0.031$, $t=0.196$, $P<0.05$), therefore, there is a significant contribution of the formulation of a clear DE policy and readiness to adopt DE. Hence we reject the null and accept the alternative hypothesis and conclude that the formulation of a clear and acceptable ODL policy would result in significant positive contribution to readiness to adopt DE.

(d) Support from the university administrators.

H_0 : Support from the university administrators does not contribute to readiness to adopt DE model.

H_A : Support from the university administrators contributes to readiness to adopt DE model.

The results indicate that, $\beta = 0.035$; $t = 1.057$, $P < 0.05$. Hence we reject the null and accept the alternative hypothesis and conclude that support from the university administrators would result in significant positive contribution to readiness to adopt DE.

(e) The lack of an Intellectual property rights policy on ODL.

H_0 : The lack of an intellectual property rights policy on ODL does not negatively contribute any explanatory power to readiness to adopt DE model.

H_A : The lack of an intellectual property rights policy on ODL would negatively contribute some explanatory power to readiness to adopt DE model.

The results indicate that, $\beta = -0.015$; $t = -0.210$, $P < 0.05$. Hence we reject the null hypothesis and accept the alternative hypothesis and conclude that the lack of an intellectual property rights policy would result in significant negative contribution to readiness to adopt DE.

(f) The efforts required to prepare DE course materials

H_0 : The expected effort needed to prepare DE course materials does not negatively contribute to readiness to adopt DE model.

H_A : The expected effort needed to prepare DE course materials negatively contributes to readiness to adopt DE model

The results indicate that, $\beta = -0.154$; $t = -2.507$, $p < 0.05$. Hence we reject the null hypothesis and accept the alternative hypothesis and conclude that the expected

efforts needed to prepare DE course materials would result in significant negative contribution to readiness to adopt DE.

(g) The time commitment required to prepare DE course materials

H₀: The time commitment required to prepare DE course materials does not negatively contribute to readiness to adopt DE model.

H_A: The time commitment required to prepare DE course materials negatively contributes to readiness to adopt DE model .

The results indicate that, $\beta = -0.191$; $t = -2.537$, $P < 0.05$. Hence we reject the null hypothesis and accept the alternative hypothesis and conclude that the time commitment a lecturer requires to prepare DE course materials would result to significant negative contribution to readiness to adopt DE.

(h) The incentives provided to those participating in DE activities

H₀: The incentives provided to those participating in DE activities does not contribute to readiness to adopt DE model.

H_A: The incentives provided to those participating in DE activities contribute to readiness to adopt DE model

The results indicate that, $\beta = 0.038$; $t = 0.609$ $P < 0.05$. Hence we reject the null hypothesis and accept the alternative hypothesis and conclude that the incentives provided to those participating in DE activities would result in significant positive contribution to readiness to adopt DE.

5.3 Discussion and Conclusion

There were significant differences in all the 11 issues between the university colleges. This implies that the colleges are at different levels of readiness to adopt DE. One would also conclude that the difference occurs because the colleges do not have the same level of exposure to DE activities. Their levels of awareness towards DE vary according to the exposure they currently have towards it.

The results agree with the CBAM model which indicates that there are seven stages teachers go through in adopting an innovation. Apparently, some colleges have gone through the seven stages (CEES and CPBH) while the rest are at the awareness, informational or the personal stages (orientation level) and that is why readiness to adopt DE in these colleges is still very low. Until the lecturers in those colleges can see the benefits that will accrue from participating in DE their rate of adoption will remain low. In Omwenga's Model (2003) which is a modification of Roger's model (1995) he says that for adoption of an innovation to be accepted, it needs to have some benefits to the individual adopting it.

The observations and conclusions that can be derived from this analysis give credence to Moore's (1999) model, which took a marketing perspective on adoption of innovation. Moore modified the technology adoption of life-cycle and included what he referred to "cracks in the bell curve" located between each of the psychographic adopter categories. He suggested that there exists an opportunity for adoption to loose momentum at each point when a new group of adopters come on board, but particularly in the transition between early adopters and early majority. The different colleges in the university represent different psychographic groups in the adoption of DE. Therefore, it can be concluded that the significant differences in the mean score of the various issues between the colleges is an indication that the colleges can be seen as representing different psychographic groups. If we were to see the DE adoption process from a marketing perspective, then it is imperative that a differentiated marketing approach be adopted for each college. Hence the needs to first look at the psychographic characteristic of each college as distinct entities and develop a different DE adoption strategy for each of the colleges. This is what Kotler

(2004), the marketing philosopher, refers to as a differentiated marketing strategy for segmenting markets. The purpose of segmenting markets is to treat each segment as unique because it is composed of individuals with generally the same characteristics. The fact that each of the six University of Nairobi colleges focuses on a broad discipline line indicates that each college has its own psychographic characteristic. Therefore, if the adoption of DE and use of ICT in teaching are to be enhanced, the university should develop different DE adoption strategies for the different colleges.

Apparently, the colleges (CEES and CBPS) that have participated in the preparation and writing of DE materials seem to indicate a positive deviation from the mean score. This implies that though the lecturers who have written distance learning materials feel that the issue of intellectual property rights is not very well- handled, there are benefits they derive from writing the DE materials that give them some other benefits. Currently, the lecturers who have written DE materials get credits for promotion. Those who have not written have not benefited, hence the significant difference between the colleges.

The results of the multivariate analysis indicate that it is possible to determine how the independent variables (factors that influence lecturers' participation in DE) influence their readiness to adopt DE. It is clear from the model that some variables contribute negatively, while others contribute positively to the model. The following variables had positive influence: training in DE (0.082); access to ICT (0.75); formulation of an ODL policy (0.013); support from the administration (0.035); adequate incentives while participating in DE (0.038). However, the following variables had negative influence to the model: Lack of an intellectual property rights policy (-0.015); efforts in translating course materials into DE (-0.154); time commitment in translating course materials into DE formats (-0.191). The value of the model's constant was -0.105 indicating that if the lecturers' concerns are not addressed, the lecturers might even totally reject DE.

Access to ICT had the greatest influence (a coefficient of 0.75) to the model. This is an indication of the value the respondents attach to ICT as the main driver of instructional delivery in distance education.

Training in DE (with a coefficient of 0.082), came second in terms of the level of influence in readiness to adopt DE. Training helps to create awareness. The respondents indicated that training is important. In the open-ended section of the questionnaire, the lecturers indicated that they required training in distance education to participate in its activities.

The need to formulate an ODL policy had a coefficient of 0.013. Though the variable contributes relatively low to the model, it has some influence nevertheless. The formulation of such a policy should involve all the stakeholders. This was what the respondents indicated in the open-ended section of the survey.

The support and the incentives the lecturers get from the university administrators cannot be underrated. Such support and incentive contributed 0.035 and 0.038 respectively to the model. This agrees with the results of the study conducted by Lee (2001), which concluded that the institutional support given to lecturers in distance education activities usually acts as a valuable source of motivation. Other studies like those conducted by Betts (1998); Jones and Moller (2000); Rockwell et. Al., (1999); Schiffer (2002) also indicated that monetary support, either in the form of stipend, continuing education or overhead pay or increased salary would motivate them to teach online.

Lack of a clear policy on intellectual property rights contributed -0.015 to the model. This can be a major threat to the adoption of DE in the university. The respondents indicated that it takes a lot of time and effort to prepare the materials. If they feel that they have no intellectual property protection of their materials, they will not be motivated to develop them. This will act as an inhibitor to the adoption of DE. The results of the studies conducted by Dooley and Murphrey(2000) indicated that the lecturers had concerns that “ capturing their intellectual property through multimedia might eliminate positions” because the materials would be used without recourse to the lecturer who developed them. They feared that they would even loose their teaching positions.

Efforts required in translating teaching materials into distance modes and time commitment into the efforts contributed -0.154 and -0.191 respectively. One respondent who had previously participated in writing the print- based distance teaching materials said (in the open-ended section of the questionnaire) that it took five times more time to prepare the materials than in a regular course. It is perhaps true but there are some advantages for writing the materials especially the e-learning modes. It is easy to adapt the notes and to make changes unlike when they are written on paper. However, it is important to note that the lecturers need to be supported by the administration while they are engaged in distance education activities. They need to be released from some activities while they are preparing the materials or given some compensation to acknowledge the extra effort they have to put in. Therefore, it is crucial for the university to have a good understanding of the contribution of each of the main variables that influence the lecturers' readiness to adopt distance education.

CHAPTER SIX

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

To recapitulate, the main thrust of this study was to look at the factors that influence the university of Nairobi lecturers' readiness to adopt distance education and the use of ICT in teaching at the University of Nairobi. Several hypotheses were tested and the findings documented in the preceding chapters. This chapter summarizes the research argument, discusses the findings and their implications, areas of further research and conclusion of the study. The rationale of the discussion is to show why the findings are the way they are or whether they are consistent with or contrary to findings in studies elsewhere.

6.2 The Research Argument: A Recast

This study sought to understand the factors and attitude that influence lecturers' readiness to adopt DE and the use of ICT in teaching at the University of Nairobi. The ever increasing changes in social, economic, political and technological fields have necessitated the universities to rethink about the instructional delivery modes they have been using. Distance education has increasingly been embraced by many universities particularly in the developed world. The universities in the developing countries have also seen the need to adopt DE, both as matter of diversification of instructional delivery and as a means to reach more students to raise operational funds to bridge their budgetary deficiencies caused by declining government support.

It is observable that the lecturers are skeptical or out-rightly negative towards the adoption of DE as an alternative mode of instructional delivery. The University of Nairobi, like other local public and private universities, has started a university –wide Open and Distance outfit with the mandate to facilitate the provision of its academic

programmes by open and distance modes. However, the rate of DE adoption has been dismally low in the university. The hypothesis was that the lecturers' level of readiness to adopt DE is low because their attitude towards it is generally negative (not supportive) and that the factors that would enable them to get fully engaged are not taken care of by the university.

Distance education philosophy is greatly influenced by the constructivism school of thought towards learning. The learner is separated in time and space from the teacher. However, the role of the teacher is critical particularly in the development of the instructional course materials and provision of learning support to the distance learner. The quality of the learning materials and learning support remains largely the responsibility of the teacher. Unfortunately, the university lecturers are generally unprepared to effectively teach by distance mode.

The thesis of this study is that before the University of Nairobi goes ahead to implement its ODL programme, it needs to establish the state of readiness to adopt the use of ICT in DE by its lecturers. It is important to study and understand the significance of the various variables deemed to contribute to lecturers' readiness to adopt the use of ICT in DE.

In light of the research problem, the study employed a survey research design that had a quantitative and qualitative approaches. The logic was that quantitative researchable hypothesis provides information that enables the researcher to make conclusions that can be generalized and that some issues could only be addressed adequately by qualitative method.

6.3 Summary of Hypothesis Testing

Table 6.1 gives a summary of the hypothesis testing of the sixteen hypotheses that covers the main variable in the study.

Table 6.1: Summary of hypothesis testing

Hypothesis	Results	Accepted/not accepted
Hypothesis No.1: The University of Nairobi lecturers' attitude towards DE is negative	$t=3.5, p<0.05$	Rejected
Hypothesis No.2: The lecturers' attitude towards DE does not significantly differ according to University of Nairobi colleges (disciplines).	$t=3.63, P<0.05$	Accepted
Hypothesis No.3: There is a significant difference in the mean scores of the University of Nairobi colleges on the issue of whether they would encourage their colleagues to use e-learning in DE.	$t=4.44, P<0.05$	Accepted
Hypothesis No.4: Factors influencing lecturers' participation in DE elsewhere are important to University of Nairobi.	$t=4.37, p<0.05$	Accepted
Hypothesis No.5: There is a significant difference in the mean scores of the factors that influence lecturers' participation in DE between the university colleges.	$t=3.0, p<0.05$	Rejected
Hypothesis No.6: There is a significant difference in the readiness to adopt DE between the	$t=4.48, p<0.05$	Accepted

university colleges.		
Hypothesis No.7: There is a significant difference in the mean scores on the issue of acceptance of DE between the colleges.	t=4.0,p<0.05	Accepted
Hypothesis No.8: There is a significant difference in the mean score on the issue of worthiness of DE between the colleges	t=3.34,P<0.05	Accepted
Hypothesis No.9: There is a significant difference in the mean score on the issue of importance of DE training between the colleges.	t=4.11,P<0.05	Accepted
Hypothesis No.10: There is a significant difference in the mean scores on the issue of a university policy on DE between the colleges.	t=4.48,p<0.05	Accepted
Hypothesis No.11: There is a significant difference in the mean scores on the issue of the support received from the university administrators between the university colleges.	t=3.74,P<0.05	Accepted
Hypothesis No.12: There is a significant difference in the mean scores on the issue of the intellectual property rights between the university colleges.	t=2.93,P<0.05	Accepted
Hypothesis No.13: There is a significant difference in the mean scores on the issue of the efforts the lecturers put in when preparing DE materials between the colleges.	t=2.04,P<0.05	Accepted

Hypothesis No.14: There is a significant difference in the mean scores on the issue of the lecturers' time commitment when developing DE materials between the colleges.	t=2.81,P<0.05	Accepted
Hypothesis No.15: There is a significant difference in the mean scores on the issue of the incentives offered by the university when participating in DE activities between the university colleges.	t=3.33,P<0.05	Accepted
Hypothesis No.16: At least the coefficient of one of the independent variables in the RDE model is not zero.	F=2.93,P<0.05	Accepted

The fact that there are significant differences in the mean scores of the various variables of the study between the various colleges is an indication that the colleges are at different level sof readiness to adopt the use ICT in DE. As indicated earlier, the colleges that have been exposed to DE activities (CEES, CBPS, and CHSS) differ significantly from the colleges (CAE, CHS AND CAVS) that have scanty exposure to DE activities.

6.4 Summary of Findings

The research results aforementioned (chapters 5, 6,7and 8) show that readiness to adopt DE and the use of ICT in DE in the University of Nairobi is influenced by several variables. The summary of hypothesis testing (Table 9.1) shows that there are significant mean differences between the university colleges in most of the variables in the study. This led to the acceptance of 15 out of the 16 hypotheses that were tested. Only one hypothesis was rejected. This is an indication of the importance of the issues influencing lecturers' readiness to adopt the use of ICT in DE.

Findings on Factors that influence lecturers' participation in distance education and the use of ICT in teaching

Results

The result as indicated by the testing of hypothesis no.4 is that the factors that influence lecturers' participation in DE in other institutions in the world are also important to the lecturers in the University of Nairobi. The results indicated that 87.7% of the respondents considered the 14 factors presented to them as, "extremely important", "very important" or "important". Only 10.3% of the respondents considered the factors as either, "not important", "not very important", or "not sure of the importance". The mean score for the 14 factors was 4.37 that lies within "extremely important" scale. Therefore the respondents considered the factors to be of great importance to them in adopting DE.

Discussions

Most of the respondents pointed out that training in DE methodology should be for all lecturers in the university. Training will enable the lecturer to get familiar with DE and its dynamics. This will enhance both the level of awareness and readiness to adopt DE. This agrees with the research findings by Gilcher and Johnstone (1989); Kirby and Garrison (1989); N.E.A.(2000); Pasmore(2003) which indicated that as instructors get more familiar with DE, and as their level of experience increases, the rate of adoption is bound to increase. Though there are basically two dominant schools of thought regarding the theory of learning: the objectivist approach and the constructionist approach, at the end of the day, instructional quality remains the responsibility of the lecture. The emphasis need to be placed on identifying effective teacher competencies, along with the training needed to support lecturers' developments.

On the provision of adequate equipment while preparing DE material, the respondents indicated that the provision of adequate DE facilities is of great concern to them. In

particular, the provision of Internet connectivity, its accessibility and reliability, availability of computers and study materials to the students were explicitly mentioned.

On the maintenance of student-teacher interactivity in a DE, the respondents seem to be concerned about the loss of interaction between them and the students. This was particularly observed in the “hard” sciences. In the open-ended section, several lecturers from the Faculty of Engineering and the Faculty of Science were concerned on how the teacher student relationship could be maintained especially in practicals, which require the presence of the teacher - student in time and space. Lori (2003) had the same observation that the “old” and tenured lecturers feel that DE separates them from the learners and this is not something that they feel comfortable about. This is a major challenge facing distance education particularly the print-based mode of instructional delivery. The e-learning mode might help to militate against it because it is possible for the teacher and the student to interact in time through the bulletin boards, e-mail, audio conferencing or video conferencing.

On The reduction of departmental workload to a lecturer when preparing DE material, one respondent from the Faculty of Education and who has participated in writing a course unit in DE, said that it takes five times more to design and prepare distance materials as compared to a regular course. Many other respondents made the same comment in the open-ended section of the questionnaire. Other studies (Betts, 1998; Dillon and Wash, 1992; Eisenburg, 1998) have pointed that the time the lecturers take to translate their teaching materials into DE format hinders them from participating in DE especially when the extra work is not rewarded by promotion or remuneration.

On the use of ICT in teaching and its attendant technical support, a majority of the respondents indicated that they are concerned by the lack of training and provision of facilities into enable them to engage in E- learning. This issue was mentioned virtually in every faculty in the open-ended section. Many respondents proposed that qualified ICT personnel be posted to their faculties to assist in either the development of e-learning materials or in the general academic activities. This concurs with the

results from Edooley (2000), which found that ICT technical support was a major factor influencing lecturers' participation in DE in Oklahoma colleges and universities.

On the issue of the provision of a clear policy on promotion opportunities for lecturers participating in DE, was repeatedly mentioned in the open-ended item 26 of section 3 of the questionnaire. It was a held position by many respondents (over 90% of the respondents) that the university does not recognize the extra load-work that lecturers perform in DE. If such work is not factored in the university promotion criteria and due to the level of commitment required to translate, design and produce DE course materials, lecturers might feel demotivated to engage in DE activities. One respondent said that he would rather write papers for conferences because they earn promotion credits from them instead of translating the teaching notes into the DE format.

The provision of a clear policy on the level of support in form of remuneration and recognition for lecturers participating in DE, was pointed out in the open-ended section 3 items 26 by all respondents from all faculties. Currently, there is no clear policy on how much money a lecturer should be paid for writing a course unit. It is not clear to the lecturers that there exists a specific policy on remuneration. It is critical that there is a clear policy and that lecturers are consulted in the formulation of the policy. Writing a DE course unit is an opportunity cost that the lecturer will forgo for not participating in other academic activities particularly the teaching of the evening students in which they earn extra money. To motivate the lecturers it is important that the remuneration is set at a level that will make the lecturer feel encouraged to participate. Perhaps it would be better to include in the promotion criteria the preparation of DE course material. This should not just be implied but should be included in the policy statements.

Lack a clear policy on issues of intellectual property rights for DE materials prepared by lecturers was pointed as a major factor that would inhibit them from participation in DE. The issue of intellectual property rights for DE material is a major concern in almost all institutions. Though there is a general intellectual property rights policy in

the university, it appears that most lecturers are not aware of it and what it contains. To encourage them to prepare study course units, lecturers need to be briefed about their rights in the material they prepare. It might be important to have a clause that clearly touches on the various materials produced by DE.

Most lecturers in the university do not have any training in teaching methodologies. This affects both the regular and distance learning courses. In section 2 open-ended question 13 and section 3 items 26, the respondents overwhelmingly stated that there is need for the university to train them in DE teaching methodologies. It is equally important to note that distance students in the university are adults. Therefore, andragogy (teaching of adults) should be taught to all the lecturers participating in DE. Adults learn differently from children and therefore, it is proposed that all lecturers be exposed to both pedagogical skills and andragogical skills.

On the provision of adequate support from the university administration while preparing DE material, respondents indicated that the top management does not seem to give the required support to DE. One respondent said, "The top management is the major hindrance in the implementation of new initiatives in the university and unless they come down from their ivory tower, ODL will remain but a big dream". University administrators, at all levels, are the chief change agents in the university. If the lecturers feel that the administrators are not supportive enough morally, financially and materially, they will not also be enthusiastic to get engaged in DE activities. The chairmen of departments all the way up to the vice-chancellor need be seen to be committed to DE activities. A study conducted by Edooley (2000) concluded that administrative support which includes providing seamless infrastructure and virtual presence for distance learners; training of lecturers on technology, instructional design and pedagogy and providing incentives to staff in form of release time, mini-grants, stipends, continuing education, recognition in the promotion and tenure processes greatly enhanced the adoption rate. However, a study by Lee (2002) found that the perception between lecturers and administrators differed when it came to administrative support in instructional activities. This is also one of the outcomes of this study. An associated issue that needs to be addressed by the university administrators is the administrative structures that would facilitate the

adoption of DE. Some respondents suggested that there should be an independent college or unit that is responsible for ODL in the university and should be directly answerable to the top management.

It also came out clearly that lecturers feel that they need adequate time to plan, prepare and deliver DE course materials. This was mentioned by the respondents who have already participated in writing DE materials in the faculties of External Studies, Science, Education and Commerce. This feeling is also pointed out in studies conducted by (Berge, 1998; Clay, 1999; Fritz and Marx, 1999).

The factor of encouragement and moral support from colleagues was one of the factors that the respondents also indicated would influence their participation in DE. The support from peers is important in the adoption process. Respondents indicated that support from their colleagues was important. This is because the peers act as role models and can share their experiences with them. In a study by Williams (2001), 63% of the respondents indicated that they would like more lecturers' showcases in instructional technology that demonstrated real-world application in the classroom. Parisot (1997) also concluded that role modelling was a primary motivational factor in the adoption and diffusion of technology.

There were other factors inhibiting lecturers' readiness to adopt the use of ICT in DE that were mentioned in the open-ended item 15. They included the negative attitude towards DE by the lecturers' colleagues, poor entry grades of the students and heavier workloads. The main motivating factors mentioned in the open-ended section included the fact that DE will help access education to more people and that the lecturers who participated in the DE training programmes were able to better their teaching skills. These findings agree with studies conducted by Betts (1998); Clark (1993); Kaiser (1998) and Moore (1997).

It is apparent that over sixty percent (60%) of the respondents had access to a computer in the office and 76.7% in their homes. This implies that a great majority of the lecturers are computer literate, a necessary prerequisite for participation in adopting the use of ICT particularly the e-learning component in DE. Approximately,

eighty -seven percent (87%) of the respondents indicated that they are ready to receive training in e-learning. However, 44.25 % of the lecturers have received some training in DE. Only forty- seven percent (47%) of the respondents had translated their teaching materials into any of the DE formats. This is unfortunate because it implies that the university has yet to spend time and resources to train over 50 % of its lecturers in DE.

Findings on Lecturers' Attitude towards the Adoption of DE

Results

The results from the data analysis on attitude indicated that the respondents had a positive attitude towards DE and the use of ICT in teaching. Hypotheses no.1 and no.2 focused on the lecturers' attitude towards DE and the use of ICT in teaching. The results also indicated that there was no significant difference in the lecturers' attitude towards DE between the University of Nairobi colleges. All respondents irrespective of their age or tenure indicated they are willing to be trained in e-learning in this study.

Discussions

It is observable that since April 2003, the university initiated a programme to create awareness on distance education particularly to the lecturers. Awareness seminars were organized for all faculties. Perhaps, this situation has helped the lecturers to develop positive attitude towards DE. It is noticeable that over 80 lecturers from the Faculty of Science, 33 from the Faculty of Commerce, 54 from the Faculty of Arts have already gone through a distance education development course since August 2004. This is parallel to the findings by N.E.A. (2000) which concluded that attitude towards DE was more favourable among those who had taught in DE courses.

The University of Nairobi colleges that have DE courses had relatively higher attitude mean score than those without the course. The overall attitude score for the study was 3.63. The following are the colleges with DE courses were, and their corresponding attitude mean score: CEES =3.81; CHSS=4.0; CBPS=4.0). This is in comparison to the colleges which do not have DE course which had the corresponding attitude mean score: CAVS=3.40; CHS=3.64 with the exception of CAE which had a high attitude score of 4.0. The respondents from CAE indicated that they would support DE so that they can attract more students to their programmes. Currently, CAE has very low enrolments in their parallel (evening or Module II courses as they

are referred to in the university). This might explain the reason why their attitude score towards the adoption of DE is higher than the other colleges without DE. In fact CAE attitude score was even higher than the colleges with DE courses!

The results of this study indicated that 79.89% of the respondents were computer literate and that 87.3% would like to be trained in e-learning. This suggests that the respondents had a positive attitude towards the adoption of DE. The positive attitude might have influenced the respondents' readiness to adopt DE particularly the E-learning method. These results seem to agree with Hapiza et al (2003) study which concluded that there is a relationship between the level of ICT knowledge and readiness to adopt E- Learning.

The lecturers' attitude score towards the use of e-learning was 4.24. This is a clear indication that majority of the lecturers' feel that e-learning is a method that should be used. This agrees with findings by Lyod & Gressarol (1986) and Dupange & Krendal (1992) that concluded that attitude towards the use of computer in DE were positively correlated to availability and usage. The findings do not agree with Cravener's(1999) conclusions that indicated that senior faculty members declined to participate in technology training because of lack of confidence.

On the issue of maintaining interactivity between the teacher and the student, the attitudes mean score was 3.30 indicating a negative attitude towards the issue. This implies that the respondents had some misgivings on the level of interactivity between the lecturers and the students in DE courses. Apparently, the respondents indicate a negative attitude towards the maintenance of interactivity between the learners and the teacher. This is yet another challenge that needs to be tackled if the University of Nairobi lecturers are to be comfortable with DE delivery mode. The findings suggest that the university should use a DE mode that offers more opportunity for interactivity between the teacher and the learner. E-learning modes which are currently being implemented in the university seem to open more avenues for interactivity. This might come into reality as more distance education learning centres are opened and are connected to the Internet. It is also possible to enhance teacher-student interactivity in the print mode by having more face-to-face sessions, using

teleconferencing system that is already installed at the extra-mural centres, more intensive and frequent regional visits to students by lecturers and by any other available method.

Lecturers' Readiness to Adopt DE

Results

The results of a multivariate analysis indicated that the independent variable that is Readiness to Adopt DE (RDE) was, linearly related to the independent variables: training in DE (TDE); knowledge of the use of ICT in DE (AICT); a clear policy on ODL (PODL); support from administrators (SDE); efforts to translate course material into DE formats (EDE); time commitment required in DE (TCDE); incentives provided by the university administrators (IDE). Hypothesis Nos. 3, 4, 6, 7, 8,9,10,11,12,13,14 and 15 tested the state of readiness to adopt DE in the university. The results also indicated that there were significant differences in how the lecturers considered each of the variables contributed*to readiness to adopt DE between the university colleges. The results of Hypothesis No.16, which was testing whether one of the independent variable had zero coefficients, indicated a positive result (that none of the independent variables had a zero coefficient and hence the model was good). The resultant regression model (as presented in chapter 5 page 187) produced the results indicated here below.

$$RDE = 0.105 + 0.082(TDE) + 0.751(Knowledge\ of\ the\ Use\ of\ ICT\ in\ DE) + 0.013(PODL) + 0.035(SDE) - 0.015(IPDE) - 0.154(EDE) - 0.191(TCDE) + 0.038(IDE).$$

The results indicated that some variables contributed negatively, while others contributed positively to the model. Any variable with a positive coefficient value was considered as an indicator of positive contribution. The more the positive coefficient increases in value the higher the rate of readiness to adopt DE. Any negative contribution indicated that the variable contributed negatively to the model. If the value of the negative coefficient increases, then readiness to adopt DE will decrease.

The results indicate that there is positive relationship between readiness to adopt DE and training in DE ($\beta=0.082$; $t=1.439, p<0.05$) formulation of an ODL policy ($\beta=0.031$; $t=0.196, p<0.05$) support from the university administrators ($\beta=0.035; t=1.057, p<0.05$) and incentives provided to lecturers while participating in DE activities ($\beta=0.038; t=0.609, p<0.05$). However, there was a negative relationship between readiness to adopt DE and the efforts the lecturers are expected to put in translating course materials into DE formats ($\beta=-0.154; t=-2.507, p<0.05$; the time commitment the lecturers have to sacrifice in DE activities ($\beta=-0.191; t=-2.537, p<0.05$ and lack of an intellectual property rights policy ($\beta=-0.015; t=-0.210, p<0.05$).

The following variables contributed positively to the model: training in DE (0.082); knowledge in the use of ICT in DE (0.75); formulation of an ODL policy (0.013); support from the administration (0.035); adequate incentives while participating in DE (0.038). The following variables contributed negatively to the model: Lack of an intellectual property rights policy (-0.015); efforts in translating course materials into DE (-0.154); time commitment in translating course materials into DE formats (-0.191). It is clear that knowledge in the use of ICT had the highest coefficient. This is an indication that the respondents attach a lot of importance and value to ICT technologies in instructional delivery. Training in DE followed in terms of the coefficient score in the model. Once again, the respondents seemed to indicate that they require the training in order to understand and participate in DE activities.

The results also indicated that the individual partial regression coefficients each of the independent variables contributed significantly to Readiness to Adopt DE mode. The hypothesis tests are found elsewhere in this thesis.

Discussions

The implication is that the university administration needs to urgently address those three issues if the rate of adoption is to be enhanced. This signifies the importance the lecturers attach to DE training, which is expected to enable them to participate and

contribute in DE activities. Studies by Johnstone (1989); Kirby and Garrison (1989); N.E.A (2001) and Passmore (2003) also indicated that as lecturers get familiar with DE, and as their level of experience increases, the rate of adoption is bound to increase. This is also corroborated by results from the study by Clark (1993) who concluded that lecturers' are ready to embark on DE provided that they have the knowledge about it. Black (1992) concluded that the understanding of DE by lecturers could contribute to their readiness to implement DE programmes. Nor Hapiza and Zawayah Mohd Yasofd (2003), Clark (1993), Heath (1996), Betts (1998), Rockwell et. al., (1998) and Lilard (1985), concluded that there is a relationship between the level of lecturers' knowledge in DE with their readiness to adopt it.

The time commitment required to translate course materials into DE formats contributes negatively to the readiness to adopt DE. As indicated earlier in chapter 5, one respondent said that it took five times as much time to write a course unit in DE as it took to prepare teaching materials in a face-to-face course. It is also observable that it takes on average three years to write DE course materials for the first semester of a degree programme in the university and for the work to be done within the programmed time lecturers need to be confined in a hotel so that they can concentrate. It took almost three years for the first batch of e-learning materials in the university to be launched in March 2006. The development of the materials started in 2003. The finding concurs with those of (Betts, 1998; Dillon and Wash, 1992; Eisenburg, 1998) who found that time commitment inhibited lecturers from participating in DE activities. They also found that the efforts the lecturers are expected to spend in translating course materials into DE demotivated them from participating. In the qualitative section respondents indicated that it took a lot of time to translate the teaching materials into distance modes. This also meant that a lecturer would have less time to devote to research that would give them credit for promotion. This was also the finding of Rockwell et al., (1999).

The results indicate that lack of an intellectual property right policy would contribute negatively to readiness to adopt DE. The issue of intellectual property rights for DE courses is a subject of much debate among the lecturers and university administrators. Uncertainty about the direction and practice of intellectual property rights policy and

practice can be an impediment to the adoption of DE. The issue of who owns and controls the process and DE course materials will dictate the nature of partnership between lecturers and the university. Guernsey and Young (1997) says that there is need to define carefully the conditions of ownership of course materials and in light of new technologies. Graham Spanier as quoted by Guernsey and young (1997) also says that to have no policy will likely cause major dysfunction in the years to come.

Other subsidiary but critical issues that need to be addressed on this matter includes whether the university can disintegrate the course material and resell it; whether the lecturers can share the materials with colleagues; whether the lecturers can update the course materials that they even do not own; whether another colleague should use or manage the course material once a lecturer has developed it. Passmore (2000) says that failure to develop intellectual property rights policies and practices emphasizing "Lecturer friendliness" is a mistake universities cannot afford to make. Over seventy-eight (78%) of the respondents stated it as one of their concerns in the open-ended section of the questionnaire.

The incentive provided by the university to lecturers participating in DE (IDE) contributes positively to readiness to adopt DE. It is important also to note that over 80% of the respondents indicated that the level of incentives provided by the university is dismally low. A 1997 survey conducted by the National Survey of Information Technology in Higher Education Institutions found that only one fifth of the institutions recognized application of information technology on the career path of their lecturers. Houseman (1997) says, "Acknowledgement of teaching in academic advancement remains a poor cousin to research... simply said, there is no incentives for faculty members to change the way they teach. When a faculty member has adequate, or better than adequate teaching evaluations and is faced with stiff competition for ever dwindling grants for research, staple of academic advancement, it is clear where time is better spent (p.17). Lee (2001) indicates that when lecturers feel institutional support, their level of motivation and dedication are increased. In a studies by Bonk (1998) and Betts, (2001), lecturers indicated that support can be demonstrated with credit towards tenure and promotion. However, the problem would occur if the administrators determining tenure and promotion may never have taught

distance education courses and therefore, are ill-equipped to properly assign merit and worth to efforts of a lecturer who has redesigned a course to be delivered by distance modes.

The university needs to develop a clear policy that recognizes the work done by lecturers in DE, particularly in preparing course materials. It is true that a lot of research (whether desk or field) is also conducted when a lecturer develops DE courseware materials. This builds a case for such work to be recognized as publication. This will enable the participating lecturers to have a chance of promotion and perhaps secure their tenure status in the university.

The fact that all the individual partial regression coefficients of the independent variables contributed significantly is an indication of the importance of the variables in the process of adopting DE and the use of ICT in DE. However, what is more critical and significant is the direction (either positive or negative) of influence each variable has in the model. Also important is the actual values of each of the coefficients of the independent variables. The independent variables with the negative coefficients imply that the variables actually inhibit readiness to adopt DE if the university does not develop and implement intervention strategies to deal with the concerns. On the other hand, the independent variables with positive coefficients imply that the universities need to also come up with intervention strategies that should enhance them.

Knowledge in the use of ICT in DE appears to be the most critical variable (with a coefficient of 0.751). The implication is that the University of Nairobi lectures place a premium value on use of ICT in DE as critical factor in influencing them to participate in DE. Therefore, issues of access to ICT facilities, training in the use of ICT and the reliability of the connectivity should be a major focus for the university. The time commitment required to translate course materials into distance mode has the highest negative effect (a coefficient of -0.191). This is another area that a clear intervention strategy should focus on. The university should look into how it can motivate lecturers to translate the teaching materials into distance modes particularly by offering release time to those who are in the process of writing DE materials.

6.5. University of Nairobi lecturers' support for E-learning as a teaching method

One objective of the study was to check whether the University of Nairobi support the use of -learning in teaching

Results

The results indicate that the University of Nairobi lecturers support the use of E-learning in teaching. Over 95% of the respondents indicated that they support the use of E-learning in teaching. In the qualitative section of the questionnaire the respondents indicated that all to teach should use E-learning.

Discussion

It is apparent that the majority of the respondents support the use of e-learning in teaching. This is corroborated by the fact that over 90 % of the respondents are computer literate. In the qualitative part of section 3 of the questionnaire, the respondents indicated that the university should offer its courses by electronic methods so that it could reach many of its potential customers. The Open- Learning Project sponsored by the Belgium government has trained over 45 lecturers in e-learning in all faculties in the university. This capacity should be enhanced so that the courses can be offered by Internet or stand alone CDs can be made available to students who have access to a computer though not connected to the Internet.

6.6 Overall Conclusions

There are various conclusions that can be made from the results of this study. The conclusions presented in this section are derived from the conclusions made from chapters five, six seven and eight.

Majority of the respondents are computer literate and are ready to be trained in e-learning. Over 80% of the respondents had a computer either at home or in the office.

Over 90% of the respondents were computer literate. Therefore, if computer literacy and availability of a computer to a lecturer in the office or at home were to be used as a measure of readiness to use ICT in teaching, then we can conclude that the lecturers are ready to adopt ICT in teaching. What needs to be done is to train the lecturers on how to use ICT for effective teaching. The University should then develop a more comprehensive ICT training programme for its lecturers. This training programme should include the effective use of ICT in instructional delivery and training the E-learning method of DE mode. Over half of the respondents do not have any training in DE. The university needs to offer DE training to its lecturers if she wants to enhance the rate of readiness to adopt DE. Training will first create the required level of awareness towards DE and hence create the necessary environment for the eventual adoption.

Readiness to adopt DE differs according to the university disciplines (colleges). The colleges are at different levels of awareness and exposure in DE. Some colleges (CEES, CHSS, and CBPS) have already translated some courses into DE formats while CAE, CAVS and CHS are yet to get engaged. Readiness to adopt DE and the use of ICT in teaching are influenced heavily by the stage at which each of the colleges is in the adoption lifecycle. The psychographic characteristic of the college has a bearing to readiness to adopt DE. Therefore, each college should be treated as unique and a different DE adoption strategy should be developed for each of them. The university should avoid using the same strategy for all lecturers from the various colleges unless it is established that they have the same psychographic characteristics.

It is evident that the factors that influence lecturers' participation in DE in other institutions of higher learning are also important to the University of Nairobi lecturers. We can, therefore, conclude that those 14 factors are universal because they apply in both the developing and developed countries. The scores were all positive indicating that they are important to the lecturers in the University of Nairobi. There is no significant difference in the mean score of the factors between the University of Nairobi colleges. Therefore, if the university desires to enhance the adoption of DE, it must address these factors as the starting point in the process of implementing its

ODL initiative. The ranking indicates generally, the order of importance of the fourteen factors to all lecturers irrespective of their discipline.

Second, it is clear that the lecturers' attitude towards the adoption of DE and the use of ICT in DE is positive. The results on the attitude from all the six colleges indicated that lecturers support DE as a delivery mode. More importantly, they support the use of e-learning for purposes of instructional delivery. The fact that there was no significant difference in attitude toward the adoption of DE in all the six colleges implies that DE has gained a critical mass that would support its full implementation in all programs. However, some lecturers feel that DE cannot be used for all programmes and in particular, the physical sciences. This misconception can gradually be erased by more exposure and through DE training. It is observable that though the University of Nairobi lecturers' attitude towards DE appeared negative 3 years ago, the situation has greatly changed mainly because of the awareness programmes that have been taking place in all the colleges.

One of the propositions of the study was that if attitude towards DE is positive (supportive) and the knowledge in the use of ICT, training in DE, ODL policy, support from the administration, incentives provided to the lecturers participating in DE are positive (have positive coefficients), the level of readiness will be high even though the other variables (lack of an intellectual property rights policy, effort the lecturers are expected to put in while translating their course materials into DE formats, time commitment while participating in DE), are negative. The results support this proposition and hence we can conclude that the level of readiness to adopt DE in the University of Nairobi is high. However, it is observable that while all the other five colleges of the university had positive attitude towards the adoption of DE (they had an attitude mean score of above 3.5), CAVS had an attitude mean score of 3.40. This indicated that the attitude towards the adoption of DE in the college was negative. Therefore, readiness to adopt DE at CAVS can be deemed to be low. This can be explained by the fact that CAVS had the least level of exposure to DE. This general positive attitude towards the adoption of DE is a very encouraging situation, which if capitalized on would ensure that DE is acceptable to a great majority of the

lecturers in the University. Generally, the University of Nairobi lectures are ready to adopt the use ICT in DE for Instructional purposes.

6.7 Recommendations

To enhance the rate of adoption of DE and the use of ICT in teaching, the university should develop different adoption enhancement strategies for each of the six colleges. The university should avoid using a single strategy for all colleges. This is because each college has its unique personality. The best option is to have a differentiated strategy approach to the adoption of DE and use of ICT in teaching.

There is need to address each of the factors that influence lecturers' participation in DE if the rate of adoption of DE is to be enhanced in the University of Nairobi. The factors can be addressed either simultaneously or in their ranking order. How to address each factor may require different strategy (ies) for the different colleges because their level of readiness and awareness differ. Further studies should be undertaken in order to investigate how and what should be done on each of the factors from the perspective of the lecturers.

The following issues need to be addressed urgently:

1. Knowledge in the use of ICT in DE appears to be the most critical variable (with a coefficient of 0.751). The implication is that the university of Nairobi lecturers place a premium value on use of ICT in DE as critical factor in influencing them to participate in DE. Therefore, issues of access to ICT facilities, training in the use of ICT and the reliability of the connectivity should be a major focus for the university. The time commitment required to translate course materials into distance mode has the highest negative effect (a coefficient of -0.191). This is another area that a clear intervention strategy should focus on. The university should look into how it can motivate lecturers to translate the teaching materials into distance modes particularly by offering release time to those who are in the process of writing DE materials.

2. The university should urgently formulate a clear policy on ODL. Lack of a clear policy will hamper the adoption rate. The main issues that need to be addressed should include structural relationships between the academic departments, which are the designers of the curriculum, and the Centre for Open and Distance Learning.
3. The university should revise its Intellectual property rights policy to take into accounts the intellectual materials that relate to Open and Distance Learning. It would be important for the university to borrow some insights from the Common wealth guidelines on intellectual property rights related to open and distance education.
4. There is need to review the incentives given to the lecturers who participate in ODL activities. Perhaps an incentive policy should be developed specifically for ODL. The policy should appreciate the fact that lecturers' involvement in DE constitutes extra workload on top of their regular face-to-face teaching responsibilities. In the open-ended section of the questionnaire, the lecturers proposed that the DE materials they develop be considered as publications and hence count in their promotion criteria. They also proposed that adequate stipends be offered to those participating in DE activities and that the university should provide adequate equipment particularly the computers and reliable Internet connectivity.
5. The expected time commitment required to translate course materials into ODL formats negatively affects the adoption rate. Therefore, it is important to release the lecturers from their regular duties while they are participating in ODL activities. Otherwise, the lecturers will be overstretched and they may not give their best to both the DE activities or to their other duties. This will have a negative overall effect on the quality of services in the university.

6. The effort required to translate course materials into ODL formats also affects the readiness to adopt DE negatively. It is important that the university recognizes the extra effort the lecturers have to put in when developing ODL materials. One way to appreciate such efforts would include provision of equipment like computers (preferably laptops), provision of technical support both in e-Learning and DE technical support. More ICT technicians should be hired and posted to all colleges to assist the lecturers who would like to translate their materials into e-Learning formats. Above all, training in DE and use of ICT in distance teaching should be paramount.

7. The university should consider offering all its courses by both distance and face-to-face modes. This will enable all students to have a choice of which mode of learning to use depending on the specific circumstances facing them at a particular time.

8. The support the lecturers get from the university administration (from the Chancellor to the heads of sections) is critical in facilitating the rate of adoption of DE. This implies that the administrators need to first appreciate and believe that DE is a viable instructional delivery mode. The administrators should offer both moral and material support to DE activities. It is proposed that there should be annual DE awareness-training programmes for all university administrators.

9. The Knowledge of the use of ICT in DE has a positive influence on readiness to adopt DE. Therefore, all lecturers should have basic training in computer literacy. This will enable the lecturers to use computer aided instructional delivery methods. In any case, it is predictable that in the not so far distant future, learning will be predominantly by e-Learning. The sooner all lecturers are exposed and acculturised into this way of learning the better for the university and distance education in general.

10. There is a need to conduct the studies on the state of readiness to adopt DE and use of ICT in teaching for each of the six colleges. This also implies that lecturers at different colleges have different psychographic characteristics depending on the stage of readiness to adopt DE and use of ICT in teaching (Moore, 1999).

11. Each college is unique in terms of discipline and the stage at which they are in the adoption of DE process. This will enable the university to develop tailor made intervention strategies that will focus on the specific needs and concerns of each college. Each college is unique in terms of discipline and the stage they are in the adoption of DE process. This also implies that lecturers at different colleges have different psychographic characteristics depending on the stage of readiness to adopt DE and use of ICT in teaching (Moore, 1999).

It should be noted that this study was done only in the University of Nairobi. Therefore, the results can only be generalized to other universities with caution. This is because the specific environment in which a university operates in is specific to itself. At the same time, the stage at which the a university is, in the process of adopting distance education, the structures and the culture of other universities might be different and hence their experiences, attitudes and state of lecturers' readiness to adopt DE and use of ICT in teaching can vary.

6.8. Contribution and implications

The results of this study have some contributions and implications to distance education as a discipline and as a system of instructional delivery.

Contribution to knowledge

This study has indicated the linear relationship between readiness to adopt the use of ICT in DE and the various variables that the University of Nairobi lecturers consider pertinent to their participation in DE. The readiness to adopt DE path analysis model that came out of the multivariate analysis of the study indicates the direction and magnitude of the relationship between readiness to adopt DE and the variables (training in DE; ICT knowledge; a clear policy on ODL; support from administrators; effort to translate course materials into DE formats; time commitment required in DE; incentives provided by the university administrators).

This understanding of the relationship between readiness to adopt DE (RDE) and the other independent variables mentioned above should enable the university managers to develop an intervention strategy that addresses each of the main issues (variables) that influence lecturers' participation and support of the DE initiative. The path analysis has established that some factors if well -tackled can enhance the adoption process while other factors if not well-addressed will make it difficult for the lecturers to adopt DE. Specifically, it comes out clearly that the following factors contribute positively on: training in DE (0.082); knowledge in the use of ICT in DE (0.75); formulation of an ODL policy (0.013); support from the administration (0.035); adequate incentives while participating in DE (0.038). On the other hand, the following factors contribute negatively: Lack of an intellectual property rights policy (-0.015); efforts in translating course materials into DE (-0.154); time commitment in translating course materials into DE format (-0.191). Each category will require its own intervention strategy. The impact of the positive factors should be enhanced while that of the negative factors should be reduced. This would enhance the adoption of the use of ICT in the university.

Policy Implication

Several policy implications arise out of this study. First, that though attitude towards DE is generally supportive (positive). some colleges have a negative attitude towards the adoption of DE. Such colleges are CAVS and CHS. It is observable that in both colleges, little if any form of DE awareness has been conducted. The university needs

to enhance its DE training activities in all colleges but more urgently at CAVS and CHS. Perhaps the kind of discipline a college pursues has a bearing in the attitude towards the adoption of DE. It can be noted that the two colleges are related to health issues in both animals and human.

It is evident that there are significant differences on the variables that influence lecturers' readiness to adopt DE between the university colleges. This implies that the colleges are at different levels of readiness to adopt and to use ICT in teaching. It is, therefore, important for the university to develop specific intervention strategies for the different colleges depending on their specific level of readiness to adopt DE.

The ODL initiative in the university would not be achieved without a clear policy framework in place. There should be a clearly formulated and implementable ODL policy framework. It should be clear how the academic disciplines relate to the Centre of Open and Distance Learning (the organ charged with the responsibility of managing distance learning programmes in the university). If DE is to be acceptable to the lecturers, it is imperative that ODL has a very clear operational structure that is also acceptable to all the stakeholders.

There are several structural issues that need to be addressed urgently. Most important is whether the unit to coordinate DE should be under one of the university's six colleges as is the case today or it should be an independent college with the sole responsibility of managing open and distance learning courses for the university. Many lecturers suggested (in the open-ended section of the questionnaire) that CODL be an independent college directly responsible to the Vice-Chancellor. The lecturers seem uncomfortable with the current arrangement because they feel that if they offer courses by DE, they will be answerable to two senior officers (principals), one at their mother college and second to the college in which CODL is housed.

There is need to formulate specific policies to address the main factors (issues) that influence the lecturers level of readiness to adopt the use of ICT in DE. It is clear that there are significant differences in the mean scores of the specific issues between the six colleges. This implies that although broad policies can be developed to address the

issues, it is critical that special and differential attention be given to each college depending on the issue at hand. How to handle each of the issues cannot be generalized because each of the colleges has its unique characteristics in terms of the discipline, the current attitude towards the adoption of DE, the level of awareness of DE and the level of readiness to adopt the use of ICT in DE.

Finally, it is important to underscore the fact that introducing new instructional technology into the current courses will cost money. However, the returns to such investment will be realized when the courses are redesigned to shift the lecturers' time-on-task to the technology or by lessening the labour intensive quality of instruction. At the end of the day, the change should focus on transferring the learning activity from the lecturer to the student. The aim of the redesigning the courses should result in either one of the following two scenarios: that the courses maintain the number of students enrollments in a course but reduce the instructional resources devoted to the course or the programmes increase the enrollments with little or no change in expenditures. As mentioned in the literature review section, the university of Nairobi needs to recognize that in order to sustain the current paradigm shift from the traditional instructional milieu to the technology-supported mode, the change must be affordable and be integrated into the common practice within the institution. Internal structural change especially in the commitment of resources in the university's core budget is paramount.

Suggestions for Areas of Further Research.

The results of this study reveal several areas, which call for further research.

One of the areas is the role of the university administrators in the DE adoption process. The move from a face-to face mode of delivery to incorporate DE mode is strategic. It obviously requires the support of the top management who are essentially responsible for corporate strategy in the university. Most of the administrators in the university are basically academic members of staff. The university administrators can directly affect lecturers' attitude towards distance education and the use of ICT in teaching. Therefore, if the administrators misunderstood the lecturers' attitude and

state of readiness to adopt DE, they may be unable to structure appropriate strategies to implement distance education. It is, therefore, crucial that a study on the administrators' attitude towards the adoption of DE is conducted. Such a study might reveal for example, whether the top management appreciates and support distance education and whether they are ready to provide the leadership and resources required for the implementation of the initiative. Specifically, further research should be done to answer the following questions. What are the administrator's attitude and readiness towards the adoption and use of ICT in teaching at the university? Are the administrator's attitude and readiness to adopt DE and use of ICT different from the lecturers? How do administrators support and motivate lecturers to adopt DE and the use of ICT in teaching? Are the administrators ready to implement the use of e-learning in the university?

Another major area should be on the concerns and needs of the lecturers as they participate in DE activities. Distance teaching involves a paradigm shift from the traditional face-to-face teaching. Like any other form of change, the lecturers will have to undergo some change. As Fullan (2001) puts it, real change whether desired or not, represents a serious personal and collective experience characterized by ambivalence and uncertainty and if the change works, out it can result in a sense of mastery, accomplishment, and professional growth. At each stage in the change process, the lecturers will have needs and concerns that must be addressed. Therefore, it is important that a study on the lecturers' needs and concerns is conducted.

Currently, there is no study that has been conducted in the University to compare the performance of students who study by face-to face method and those who learn by distance method. The study revealed that some lecturers feel that the two categories of students cannot have the same learning outcomes. An experimental study in this area would be a great contribution to the understanding of the dynamics of DE particularly on the learners.

There is a need to conduct studies on the state of readiness to adopt DE and use of ICT in teaching for each of the six colleges. This will help in understanding the dynamics that cause the differences in the readiness to adopt DE by the different

of the lecturers at different colleges in the readiness process.

Still another area of research would be on whether the lecturers improve their teaching skills after undergoing training in DE teaching and also whether they get any more professional satisfaction from engaging in DE.

A study on the state of e-readiness at the national level and focusing on all sectors should be conducted to ascertain the level of e-readiness in Kenya. Still, there should be an e-readiness study in the education sector focusing on institutions of higher education. There should be an e-readiness study specifically conducted at the University of Nairobi.

This will enable the university to develop a comprehensive policy on e-readiness focusing not only on teaching but all aspects of the university management.

Since this was a cross-sectional study, it would be important that a longitudinal research be conducted. This might provide deeper insight and understanding of how the lecturers can be facilitated to adopt DE and the use of ICT in teaching.

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APPENDICES

APPENDIX 1: LETTER ACCOMPANYING THE QUESTIONNAIRE

DATE...

Dear Prof/ Dr./Mr./Mrs./Miss

College.....

Faculty/School/Institute

Department.....

Dear Colleague,

As you are aware, the University of Nairobi would like to enhance its Student Enrollment in various Academic Programmes. To this end, the University intends to adopt Open, Distance and E-learning as an Instructional Delivery Mode. This is explicitly stated in the current University of Nairobi Strategic Plan (2005-2010).

In the attached questionnaire, I intend to investigate the attitudes Lecturers have towards the adoption of ICT in Distance Learning and the processes they will undergo as they adopt ODL and E-Learning.

The understanding of the lecturer's opinions and attitude is an essential component for the successful implementation of ODL and E-Learning in the University.

Therefore, I invite you to fill this questionnaire, which will take you less than ten minutes.

Any information given in this questionnaire will not be used for any other purpose other than for this study. The data collected from you will be treated anonymously and its privacy is guaranteed.

Please return the filled questionnaire to the Faculty / Institute / School Administrator by _____

I thank you for sparing time to fill the questionnaire.

Yours Sincerely,

CHRISTOPHER MWANGI GAKUU.

APPENDIX 2: A SAMPLE OF DEFINITIONS AND CONCEPTS ACCOMPANYING THE QUESTIONNAIRE

1. Definition of important concepts in the questionnaire.

The following important concepts, in the questionnaire, have been defined here below.

- ***ICT (information communication technologies):*** Distance learning relies heavily on ICT for course instruction delivery. The main ICT modes currently used in the University of Nairobi are: Print media (study units) and E-learning (using electronic means i.e., through the internet, CDs etc) ordinarily called computer mediated media
- ***Distance Education:*** Distance education, some times referred to as distance learning, and is learning that occurs when the learner and the teacher are separated in time and space from each other. The teacher and learner are physically apart. The learning takes place at a time the learner wants and at a different place from the teacher.
- ***E-Learning (Electronic learning):*** A mode of distance learning through which learning is delivered by electronic means i.e., by Internet, CD- ROMS and student support systems.
- ***Regular course-*** A course taught by face-to-face method in a university campus. The teacher and student are not separated in space and time. This is the traditional classroom teaching.

APPENDIX 3: THE QUESTIONNAIRE

Section I: Background Data

1. Please write, in the spaces provided the college, faculty and department you belong to.

College.....

Faculty.....

Department.....

- (2) Please indicate your gender.(Tick one)

☐ Male

Female ☐

- (3) For how long have you been teaching at the University of Nairobi?
(Tick one).

☐ 0-2 years

☐ 3-5 years

☐ 6-10 years

☐ 11-15 years

☐ 16 and above

4. Please indicate which category of Lecturer you are (Tick one)

☐ Part-time

Full-time ☐

5. Please indicate whether you are on permanent or contract terms of employment (Tick one)

☐ Permanent

contract ☐

6. Have you ever participated in any distance education activity?
(Tick one)

☐ Yes

No ☐

7. Have you ever participated in any distance education training? *(Tick one)*

☐ Yes

No ☐

8. Have you written any distance education course material in any form, either print or E-learning? *(Tick one)*

Yes

☐

No

☐

9. Would you like to be trained, by the University, on how to offer the course(s) you teach by electronic learning? *(Tick one)*

Yes

☐

No

☐

10. Would you consider yourself computer literate? *(Tick one)*

Yes

☐

No

☐

11. Do you have a computer in your house or home? *(Tick one)*

Yes

☐

No

☐

12. Do you have access to a personal computer in the office? *(Tick one)*

☐

Yes

☐

No

☐☐☐

13. Please indicate any other issue which you consider to be important as background data in the space provided.

SECTION 2:

Please tick the degree of importance the following elements are for you to participate in distance learning activities. Tick only once .

Statement	Extremely important	Very important	Important	Not very important	Not important at all	Not applicable
1) The maintenance of student-teacher interactivity in a distance learning course at the same level as of a regular course.						
2) The provision of adequate time to plan, prepare and deliver distance learning course materials.						
3) The provision of adequate support from the University administration during the preparation of distance-learning materials.						
4) Training on how to use distance learning (ICT) technology to deliver courses by distance learning modes.						
5) The reduction of departmental workload to enable the lecturer to prepare distance learning course materials						
6) Training in distance teaching methods						
7) Training in what distance education is all about.						
8)The provision of adequate equipment i.e. computers and other materials while preparing distance learning course materials						

Statement	Extremely important	Very important	Not sure of its importance	Not very important	Not Important at all	Not applicable
9) The provision of distance learning technical support to enable a lecturer to use ICT to deliver a course by distance learning.						
10) A clear policy on the level of Support in form of Stipends, to lecturers participating in Distance learning activities.						
11) A clear policy on promotion opportunities for lecturers participating in Distance learning activities.						
12) A clear policy on issues of intellectual property rights for distance learning course materials						
13) Moral support from colleagues while participating in distance learning activities						
14) Encouragement from colleagues while participating in distance learning activities.						

15. In the space provided here below, please indicate any other elements you would consider important for you participate in distance learning activities.

SECTION 3:

For the statements listed here below, please indicate by ticking whether you strongly agree, agree, you are uncertain, disagree, strongly disagree or not applicable against each of the following statements. Tick only one choice for each statement.

STATEMENT	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Not applicab
1) Distance education is an effective and acceptable mode of teaching.						
2) The use of Information Communication Technology (ICT) in distance learning enhances teaching in distance learning programmes.						
3) All lecturers should be trained in the use of ICT in distance learning.						
4) There is a difference in examination performance, in the same course, between distance learners and regular learners.						
5) It does not take a lot of time for a lecturer to write a course in a distance learning mode.						
6) I would support all programmes in my department to be also offered by distance learning methods to reach more students.						
7) Though there is a separation of teacher and student in time and						

space in distance learning, teacher-student interaction is just as good as in a regular course.						
8) A lecturer has complete control of his/her intellectual property of the distance learning course he/she has developed.						
9) Examination cheating in distance learning is not any greater a threat to the quality of distance learning courses than in a regular course.						
10) It is easy for a lecturer to discuss with the learner, course content and quality in a distance learning course.						
11) A lecturer's time commitment in course preparation is not any greater in distance learning than in a regular course.						
12) Distance learning is appropriate for all courses in any discipline.						
13) Distance learning courses offer the same quality of learning as in regular courses.						
14) All lecturers should be trained in distance learning deliver methods.						

15) I would encourage my colleagues to participate in the use of computer-mediated teaching (E-learning) methods.						
16) I would be ready to participate in further training in the use of ICT in distance learning.						
17) The university offers promotion opportunities to lecturers who participate in distance learning activities.						
18) The university offers incentives to motivate lecturers to participate in the use of ICT in distance learning.						
19) The university offers adequate stipend to the lecturers who write distance learning course material.						
20) A clear policy on open and distance learning would facilitate the adoption of ICT in distance learning.						
21) Training in distance learning methods would facilitate the adoption of ICT.						
22) Adequate support systems, for example, the availability of facilities and equipments, are a major concern to me in delivering my course by distance learning.						

23) There is adequate distance learning technical support to handle ICT technology and equipment in distance learning.						
24) I am ready to receive further training in distance learning.						
25) I would support the idea of Starting a University-wide distance learning centre to coordinate distance learning activities for all disciplines.						

26. In the space provided here below, list any other element that you consider to be of significance to you.

PPENDIX 4: Instruments Reliability Analysis Tests (CRONBACH'S ALPHA)

Section 1 Items S106 TO S112

Reliability Analysis - Scale (ALPHA)

(A) ***** Method 2 (covariance matrix) will be used
for this analysis *****

- 1. S16
- 2. S17
- 3. S18
- 4. S19
- 5. S110
- 6. S111
- 7. S112

		Mean	Std Dev	Cases
1. S16	1.4106	.4923	789.0	
2. S17	1.5944	.4913	789.0	
3. S18	1.5120	.5002	789.0	
4. S19	1.0608	.2392	789.0	
5. S110	1.1521	.3593	789.0	
6. S111	1.2281	.4199	789.0	
7. S112	1.3397	.4739	789.0	

Correlation Matrix					
	S16	S17	S18	S19	S110
S16	1.0000				
S17	.6895	1.0000			
S18	.8149	.8462	1.0000		
S19	.3049	.2102	.2485	1.0000	
S110	.5074	.3498	.4134	.6009	1.0000
S111	.6513	.4491	.5307	.4681	.7790
S112	.8592	.5924	.7001	.3549	.5905

S111 S112

S111	1.0000	
S112	.7580	1.0000

N of Cases = 789.0

Reliability Cocfficients 7 items

Alpha = .9012 Standardized item alpha = .8984

*****Method 2 (covariance matrix) will be used for
this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	S16	1.4106	.4923	789.0
2.	S17	1.5944	.4913	789.0
3.	S18	1.5120	.5002	789.0
4.	S19	1.0608	.2392	789.0
5.	S110	1.1521	.3593	789.0
6.	S111	1.2281	.4199	789.0
7.	S112	1.3397	.4739	789.0

Correlation Matrix

	S16	S17	S18	S19	S110
S16	1.0000				
S17	.6895	1.0000			
S18	.8149	.8462	1.0000		
S19	.3049	.2102	.2485	1.0000	
S110	.5074	.3498	.4134	.6009	1.0000
S111	.6513	.4491	.5307	.4681	.7790
S112	.8592	.5924	.7001	.3549	.5905
		S111	S112		

S111	1.0000	
S112	.7580	1.0000

N of Cases = 789.0

Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1.3283	1.0608	1.5944	.5336	1.5030	.0374

RELIABILITY ANALYSIS - SCALE (ALPHA)

Analysis of Variance

Source of Variation	Sum of Sq.	DF	Mean Square	F	Prob.
Between People	653.5723	788	.8294		
Within People	564.2857	4734	.1192		
Between Measures	176.8238	6	29.4706	359.6152	.0000
Residual	387.4619	4728	.0820		
Nonadditivity	44.0026	1	44.0026	605.6040	.0000
Balance	343.4593	4727	.0727		
Total	1217.8580	5522	.2205		
Grand Mean	1.3283				

Intraclass Correlation Coefficients

Two-Way Mixed Effects Model (Absolute Agreement Definition)

ICC 95% Confidence Interval

Measure	Value	Lower Bound	Upper Bound	F-Value	Sig.
Single Rater	.4725	.3727	.5580	10.1208	.0000
Average of Raters*	.8625	.7999	.9007	10.1208	.0000

Degrees of freedom for F-tests are 788 and 4728. Test Value = 0.

* Assumes absence of People*Rater interaction.

Tukey estimate of power to which observations
must be raised to achieve additivity = -.9262

Hotelling's T-Squared = 901.4891 F = 149.2948 Prob. = .0000

Degrees of Freedom: Numerator = 6 Denominator = 783

Reliability Coefficients 7 items

Alpha = .9012 Standardised item alpha = .8984

Correlation Matrix

	S16	S17	S18	S19	S110
S16	1.0000				
S17	.6895	1.0000			
S18	.8149	.8462	1.0000		
S19	.3049	.2102	.2485	1.0000	
S110	.5074	.3498	.4134	.6009	1.0000
S111	.6513	.4491	.5307	.4681	.7790
S112	.8592	.5924	.7001	.3549	.5905

	S111	S112
S111	1.0000	
S112	.7580	1.0000

Reliability Analysis - Scale (ALPHA)

N of Cases = 789.0

Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	1.3283	1.0608	1.5944	.5336	1.5030	.0374

Item Variances	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.1887	.0572	.2502	.1930	4.3730	.0053

Inter-item

Correlations	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.5581	.2102	.8592	.6490	4.0870	.0385

Analysis of Variance

Source of Variation	Sum of Sq.	DF	Mean Square	F	Prob.
Between People	653.5723	788	.8294		
Within People	564.2857	4734	.1192		
Between Measures	176.8238	6	29.4706	359.6152	.0000
Residual	387.4619	4728	.0820		
Nonadditivity	44.0026	1	44.0026	605.6040	.0000
Balance	343.4593	4727	.0727		
Total	1217.8580	5522	.2205		
Grand Mean	1.3283				

Intraclass Correlation Coefficients

Two-Way Random Effects Model (Consistency Definition)

ICC 95% Confidence Interval

Measure	Value	Lower Bound	Upper Bound	F-Value	Sig.
Single Rater	.5658	.5369	.5950	10.1208	.0000
Average of Raters	.9012	.8903	.9114	10.1208	.0000

Degrees of freedom for F-tests are 788 and 4728. Test Value = 0.

Tukey estimate of power to which observations
must be raised to achieve additivity = -.9262

Hotelling's T-Squared = 901.4891 F = 149.2948 Prob. = .0000
Degrees of Freedom: Numerator = 6 Denominator = 783

Reliability Coefficients 7 items

Alpha = .9012 Standardized item alpha = .8984

Questionnaire Section 2: Items, S201 TO S214

***** *Method 2 (covariance matrix) will be used for this analysis* *****

Reliability Analysis - Scale (ALPHA)

- 1. S201
- 2. S202
- 3. S203
- 4. S204
- 5. S205
- 6. S206
- 7. S207
- 8. S208
- 9. S209
- 10. S210
- 11. S211
- 12. S212
- 13. S213
- 14. S214

	Mean	STD Dev	Cases
1. S201	3.7763	1.1022	733.0
2. S202	4.6726	.4696	733.0
3. S203	4.7271	.4895	733.0
4. S204	4.2701	1.0017	733.0
5. S205	3.9536	.8935	733.0
6. S206	4.2360	.9933	733.0
7. S207	4.0218	.9464	733.0
8. S208	4.6248	.5865	733.0
9. S209	4.5225	.6325	733.0
10. S210	4.1883	.8281	733.0
11. S211	4.2156	.8297	733.0
12. S212	4.3997	.7446	733.0
13. S213	4.0177	.7600	733.0
14. S214	3.7012	.9748	733.0

Correlation Matrix

	S201	S202	S203	S204	S205
S201	1.0000				
S202	.8084	1.0000			
S203	.8994	.7994	1.0000		
S204	.7984	.9288	.7912	1.0000	
S205	.9479	.7126	.7986	.7253	1.0000
S206	.7795	.8981	.7507	.9560	.7066
S207	.8900	.6924	.7795	.7157	.9398
S208	.8209	.9174	.8562	.9051	.7748
S209	.7675	.7607	.7698	.8399	.7342
S210	.7960	.6330	.6997	.6764	.8814
S211	.7937	.6372	.7167	.6909	.8630
S212	.7516	.6873	.7118	.7396	.7794
S213	.9523	.7628	.8209	.7707	.9085

Reliability Analysis - Scale (ALPHA)

Correlation Matrix

	S201	S202	S203	S204	S205
S214	.9371	.7858	.8881	.7767	.8953
	S206	S207	S208	S209	S210
S206	1.0000				
S207	.7008	1.0000			
S208	.8557	.7654	1.0000		
S209	.8537	.7477	.8605	1.0000	
S210	.6650	.9203	.7503	.7586	1.0000
S211	.6808	.9091	.7699	.7951	.9707

S212	.7459	.7940	.8130	.8698	.8592
S213	.7600	.8694	.7658	.7423	.7935
S214	.7516	.8822	.8192	.7542	.7822

S211	S212	S213	S214	
S211	1.0000			
S212	.8841	1.0000		
S213	.7912	.7310	1.0000	
S214	.7824	.7407	.8757	1.0000

N of Cases = 733.0

Reliability Coefficients 14 items

Alpha = .9777 Standardized item alpha = .9825

******* Method 2 (covariance matrix) will be used for this analysis *******

Reliability Analysis - Scale (ALPHA)

	Mean	Std Dev	Cases
1. S201	3.7763	1.1022	733.0
2. S202	4.6726	.4696	733.0
3. S203	4.7271	.4895	733.0
4. S204	4.2701	1.0017	733.0
5. S205	3.9536	.8935	733.0
6. S206	4.2360	.9933	733.0
7. S207	4.0218	.9464	733.0

8.	S208	4.6248	.5865	733.0
9.	S209	4.5225	.6325	733.0
10.	S210	4.1883	.8281	733.0
11.	S211	4.2156	.8297	733.0
12.	S212	4.3997	.7446	733.0
13.	S213	4.0177	.7600	733.0
14.	S214	3.7012	.9748	733.0

Correlation Matrix

	S201	S202	S203	S204	S205
S201	1.0000				
S202	.8084	1.0000			
S203	.8994	.7994	1.0000		
S204	.7984	.9288	.7912	1.0000	
S205	.9479	.7126	.7986	.7253	1.0000
S206	.7795	.8981	.7507	.9560	.7066
S207	.8900	.6924	.7795	.7157	.9398
S208	.8209	.9174	.8562	.9051	.7748
S209	.7675	.7607	.7698	.8399	.7342
S210	.7960	.6330	.6997	.6764	.8814
S211	.7937	.6372	.7167	.6909	.8630
S212	.7516	.6873	.7118	.7396	.7794
S213	.9523	.7628	.8209	.7707	.9085
S214	.9371	.7858	.8881	.7767	.8953

	S206	S207	S208	S209	S210
S206	1.0000				
S207	.7008	1.0000			
S208	.8557	.7654	1.0000		
S209	.8537	.7477	.8605	1.0000	
S210	.6650	.9203	.7503	.7586	1.0000
S211	.6808	.9091	.7699	.7951	.9707
S212	.7459	.7940	.8130	.8698	.8592
S213	.7600	.8694	.7658	.7423	.7935

S214 .7516 .8822 .8192 .7542 .7822

Reliability Analysis - Scale (alpha)

Correlation Matrix

	S211	S212	S213	S214
S211	1.0000			
S212	.8841	1.0000		
S213	.7912	.7310	1.0000	
S214	.7824	.7407	.8757	1.0000

N of Cases = 733.0

Analysis of Variance

Source of Variation	Sum of Sq.	DF	Mean Square	F	Prob.
Between People	5425.6728	732	7.4121		
Within People	2573.6429	9529	.2701		
Between Measures	1001.5148	13	77.0396	466.3162	.0000
Residual	1572.1280	9516	.1652		
Nonadditivity	270.7685	1	270.7685	1979.7469	.0000
Balance	1301.3595	9515	.1368		
Total	7999.3156	10261	.7796		
Grand Mean	4.2377				

Intraclass Correlation Coefficients

Two-way Random Effects Model (Absolute Agreement Definition)

ICC 95% Confidence Interval					
Measure	Value	Lower Bound	Upper Bound	F-Value	Sig.
Single Rater	.6571	.5770	.7209	44.8651	.0000
Average of Raters	.9641	.9499	.9732	44.8651	.0000

Degrees of freedom for F-tests are 732 and 9516. Test Value = 0.

Tukey estimate of power to which observations
must be raised to achieve additivity = 4.0303

Reliability Coefficients 14 items

Alpha = .9777 Standardized item alpha = .9825

Questionnaire Section 3: Sc301 to Sc325

***** *Method 2 (covariance matrix) will be used for this analysis* *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. S301
2. S302
3. S303
4. S304
5. S305
6. S306
7. S307
8. S308
9. S309
10. S310
11. S311
12. S312
13. S313
14. S314
15. S315

16. S316
17. S317
18. S318
19. S319
20. S320
21. S321
22. S322
23. S323
24. S324
25. S325

RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	S301	3.9615	.6929	597.0
2.	S302	4.2797	.7331	597.0
3.	S303	4.0871	.9318	597.0
4.	S304	2.9782	.8261	597.0
5.	S305	1.7253	.6225	597.0
6.	S306	3.2915	1.2473	597.0
7.	S307	2.6683	1.0086	597.0
8.	S308	2.3836	.9022	597.0
9.	S309	2.6281	.9478	597.0
10.	S310	2.9280	.9898	597.0
11.	S311	2.2261	.8499	597.0
12.	S312	2.1139	.9271	597.0
13.	S313	2.8191	1.0220	597.0
14.	S314	3.8358	1.0960	597.0
15.	S315	4.2546	.7478	597.0
16.	S316	4.3551	.7950	597.0
17.	S317	3.0017	1.0830	597.0
18.	S318	3.0737	1.2253	597.0
19.	S319	3.1491	1.2218	597.0
20.	S320	4.2797	.7098	597.0
21.	S321	4.2379	.7533	597.0
22.	S322	4.1960	1.0713	597.0
23.	S323	2.7253	1.1359	597.0
24.	S324	4.2714	.9233	597.0
25.	S325	4.1792	1.0664	597.0
N of Cases =		597.0		

Analysis of Variance

Source of Variation	Sum of Sq.	DF	Mean Square	F	Prob.
Between People	11280.3933	596	18.9268		
Within People	12120.8800	14328	8460		
Between Measures	9749.6150	24	406.2340	2450.4940	.0000
Residual	2371.2650	14304	.1658		
Nonadditivity	9.6992	1	9.6992	58.7442	.0000
Balance	2361.5657	14303	.1651		
Total	23401.2733	14924	1.5680		

Grand Mean 3.3460

Intraclass Correlation Coefficients

Two-way Random Effects Model (Absolute Agreement Definition)

ICC 95% Confidence Interval					
Measure	Value	Lower Bound	Upper Bound	F-Value	Sig.
Single Rater	.4701	.3439	.5758	114.1709	.0000
Average of Raters	.9569	.9288	.9715	114.1709	.0000

Degrees of freedom for F-tests are 596 and 14304. Test Value = 0.

Tukey estimate of power to which observations
must be raised to achieve additivity = 1.1214

Hotelling's T-Squared = 36728.0939 F = 1471.2806 Prob. = .0000
Degrees of Freedom: Numerator = 24 Denominator = 573

Reliability Analysis - Scale (ALPHA)

Reliability Coefficients 25 items

Alpha = .9912 Standardized item alpha = .9924

******* Method 2 (covariance matrix) will be used for this analysis *******

Reliability Analysis - Scale (ALPHA)

- 1. S301
- 2. S302
- 3. S303
- 4. S304
- 5. S305
- 6. S306
- 7. S307
- 8. S308
- 9. S309

- 10. S310
- 11. S311
- 12. S312
- 13. S313
- 14. S314
- 15. S315
- 16. S316
- 17. S317
- 18. S318
- 19. S319
- 20. S320
- 21. S321
- 22. S322
- 23. S323
- 24. S324
- 25. S325

N of Cases = 597.0

Statistics for	Mean	Variance	Std Dev	Variables
Scale	83.6499	473.1709	21.7525	25

Analysis of Variance

Source of Variation	Sum of Sq.	DF	Mean Square	F	Prob.
Between People	11280.3933	596	18.9268		
Within People	12120.8800	14328	.8460		
Between Measures	9749.6150	24	406.2340	2450.4940	.0000
Residual	2371.2650	14304	.1658		
Nonadditivity	9.6992	1	9.6992	58.7442	.0000
Balance	2361.5657	14303	.1651		
Total	23401.2733	14924	1.5680		
Grand Mean	3.3460				

Intraclass Correlation Coefficients

Two-Way Random Effects Model (Consistency Definition)

ICC 95% Confidence Interval

Measure	Value	Lower Bound	Upper Bound	F-Value	Sig.
Single Rater	.8191	.8016	.8362	114.1709	.0000
Average of Raters	.9912	.9902	.9922	114.1709	.0000

Degrees of freedom for F-tests are 596 and 14304. Test Value = 0.

Tukey estimate of power to which observations
must be raised to achieve additivity = 1.1214

Hotelling's T-Squared = 36728.0939 F = 1471.2806 Prob. = .0000
Degrees of Freedom: Numerator = 24 Denominator = 573

Reliability Analysis - Scale (ALPHA)

Reliability Coefficients 25 items

Alpha = .9912 Standardized item alpha = .9924

***** Method 1 (space saver) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

1. S301
2. S302
3. S303
4. S304
5. S305
6. S306
7. S307
8. S308
9. S309
10. S310
11. S311
12. S312
13. S313
14. S314
15. S315

16. S316
17. S317
18. S318
19. S319
20. S320
21. S321
22. S322
23. S323
24. S324
25. S325

RELIABILITY ANALYSIS - SCALE (ALPHA)

			Mean	Std Dev	Cases
1.	S301	3.9615	.6929	597.0	
2.	S302	4.2797	.7331	597.0	
3.	S303	4.0871	.9318	597.0	
4.	S304	2.9782	.8261	597.0	
5.	S305	1.7253	.6225	597.0	
6.	S306	3.2915	1.2473	597.0	
7.	S307	2.6683	1.0086	597.0	
8.	S308	2.3836	.9022	597.0	
9.	S309	2.6281	.9478	597.0	
10.	S310	2.9280	.9898	597.0	
11.	S311	2.2261	.8499	597.0	
12.	S312	2.1139	.9271	597.0	
13.	S313	2.8191	1.0220	597.0	
14.	S314	3.8358	1.0960	597.0	
15.	S315	4.2546	.7478	597.0	
16.	S316	4.3551	.7950	597.0	
17.	S317	3.0017	1.0830	597.0	
18.	S318	3.0737	1.2253	597.0	
19.	S319	3.1491	1.2218	597.0	
20.	S320	4.2797	.7098	597.0	
21.	S321	4.2379	.7533	597.0	
22.	S322	4.1960	1.0713	597.0	
23.	S323	2.7253	1.1359	597.0	
24.	S324	4.2714	.9233	597.0	
25.	S325	4.1792	1.0664	597.0	

Reliability Coefficients

N of Cases = 597.0 *N of Items* = 25 *Alpha* = .9912

APPENDIX 5: Questionnaire Coding Frame

Questionnaire Section 1: Code= Sc1

CODE FOR SPECIFIC ITEMS 1-14

ITEM	ITEM CODES	RESPONSE CODE				
1	S101	College Code				
2	S102	Male=01	Female = 02			
3	S103	0-2 Years=1	3-5 Years =2	6-10 years = 3	11-15years=4	
4	S104	Part-Time=1	Full-Time = 2			
5	S105	Parmanent=1	Contract = 2			
6	S106	YES = 1	NO = 2			
7	S107	YES = 1	NO = 2			
8	S108	YES = 1	NO = 2			
9	S109	YES = 1	NO = 2			
10	S110	YES = 1	NO = 2			
11	S111	YES = 1	NO = 2			
12	S112	YES = 1	NO = 2			
13	S113	YES = 1	NO = 2			

QUESTIONNAIRE SECTION2: CODE=SC2

CODE FOR SPECIFIC ITEMS1-14

ITEM	ITEM CODE	RESPONSE CODE				
1	S201	EXTREMELY IMPORTANT = 5	VERY IMPORTANT = 4	NOT SURE OF ITS IMPORTANCE = 3	NOT VERY IMPORTANT=2	NOT IMPORTANT AT ALL =1
2	S202	<i>SAME TO ITEM 14</i>	<i>SAME TO ITEM 14</i>	<i>SAME TO ITEM 14</i>	<i>SAME TO ITEM 14</i>	<i>SAME TO ITEM 14</i>
3	S203					
4	S204					
5	S205					
6	S206					
7	S207					
8	S208					
9	S209					
10	S210					
11	S211					
12	S212					
13	S213					
14	S214					
15	S215					

QUESTIONNAIRE SECTION 3: CODE= S3

CODE FOR SPECIFIC ITEMS S301-S325

ITEM	ITEM CODE	RESPONSE CODE				
1	S301	EXTREMELY IMPORTANT=5	VERY IMPORTANT=4	NOT SURE OF ITS IMPORTANCE=3	NOT VERY IMPORTANT=2	NOT IMPORTANT AT ALL=1
2	S302	<i>SAME TO ITEM 25</i>	<i>SAME TO ITEM 25</i>	<i>SAME TO ITEM 25</i>	<i>SAME TO ITEM 25</i>	<i>SAME TO ITEM 25</i>
3	S303					
4	S304					
5	S305					
6	S306					
7	S307					
8	S308					
9	S309					
10	S310					
11	S311					
12	S312					
13	S313					
14	S314					
15	S315					
16	S316					
17	S317					
18	S318					
19	S319					
20	S320					
21	S321					
22	S322					
23	S323					
24	S324					
25	S325					
26	S326					

APPENDIX 6 : READINESS TO ADOPT DE MODEL SPSS EXTRACTIONS

MODEL SUMMARY

Model Summary

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
Model					R Square Change	F Change	df1	df2	Sig. F Change	
1	.963	.928	.924	.240	.928	231.997	8	144	.000	.65

(a) Predictors: (Constant), UONIS10, S316, UONIS6, UONIS4, UONIS8, UONIS7, UONIS5, UONIS9

(b) Dependent Variable: S324.

ANOVA ANALYSIS

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107.211	8	13.401	231.997	.000
	Residual	8.318	144	.058		
	Total	115.529	152			

(a) Predictors: (Constant), UONIS10, S316, UONIS6, UONIS4, UONIS8, UONIS7, UONIS5, UONIS9

(b) Dependent Variable: S324

READINESS TO ADOPT DISTANCE EDUCATION (RDE) MODEL
COEFFICIENT ANALYSIS

Coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics
Model		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance
	1.(Constant)	-.105	.400		-.262	.794	-.894	.685				
	S316	.869	.049	.751	17.569	.000	.771	.966	.954	.826	.393	.2743
	UONIS4	.136	.095	.082	1.439	.152	-.051	.324	-.572	.119	.032	.1536
	UONIS5	.024	.121	.013	.196	.845	-.216	.263	-.511	.016	.004	.1099
	UONIS6	.081	.077	.035	1.057	.292	-.071	.233	-.296	.088	.024	.4542
	UONIS7	-.012	.057	-.015	-.210	.834	-.126	.101	-.746	-.018	-.005	.0981
												.9
	UONIS8	-.144	.058	-.154	-2.507	.013	-.258	-.031	-.804	-.205	-.056	.1327
	UONIS9	-.154	.061	-.191	-2.537	.012	-.274	-.034	-.829	-.207	-.057	.0881
												.5
	UONIS10	.069	.114	.038	.609	.543	-.156	.295	-.470	.051	.014	.1307

(a) Dependent Variable: S324

READINESS TO ADOPT DISTANCE EDUCATION (RDE) MODEL
 COEFFICIENT CORRELATIONS

Coefficient Correlations

Model			UONIS10	S316	UONIS6	UONIS4	UONIS8	UONIS7	UONIS5	UONIS9
1	Correlations	UONIS10	1.000	-.039	-.115	-.061	-.027	-.234	-.719	
		S316	-.039	1.000	-.079	-.117	.281	-.060	-.020	
		UONIS6	-.115	-.079	1.000	-.210	-.175	-.291	.001	
		UONIS4	-.061	-.117	-.210	1.000	.206	.050	-.355	
		UONIS8	-.027	.281	-.175	.206	1.000	-.536	-.002	
		UONIS7	-.234	-.060	-.291	.050	-.536	1.000	.065	
		UONIS5	-.719	-.020	.001	-.355	-.002	.065	1.000	
		UONIS9	.173	.443	.332	-.558	-.198	-.374	-.102	
	Covariances	UONIS10	.013	.000	-.001	-.001	.000	-.002	-.010	
		S316	.000	.002	.000	-.001	.001	.000	.000	
		UONIS6	-.001	.000	.006	-.002	-.001	-.001	4.961E-06	
		UONIS4	-.001	-.001	-.002	.009	.001	.000	-.004	
		UONIS8	.000	.001	-.001	.001	.003	-.002	-1.090E-05	
		UONIS7	-.002	.000	-.001	.000	-.002	.003	.000	
		UONIS5	-.010	.000	4.961E-06	-.004	-1.090E-05	.000	.015	
		UONIS9	.001	.001	.002	-.003	-.001	-.001	-.001	

(a). Dependent Variable: S324

RDE MODEL RESIDUAL STATISTICS

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.77	5.16	4.43	.840	1
Std. Predicted Value	-4.363	.868	.000	1.000	1
Standard Error of Predicted Value	.028	.121	.055	.020	1
Adjusted Predicted Value	.69	5.18	4.41	.852	14
Residual	-1.52	.48	.00	.234	14
Std. Residual	-6.313	2.008	.000	.973	14
Stud. Residual	-6.560	2.087	.000	1.026	14
Deleted Residual	-1.64	.52	.00	.255	14
Stud. Deleted Residual	-7.807	2.112	-.013	1.101	14
Mahal. Distance	1.035	37.590	7.948	6.841	14
Cook's Distance	.000	.381	.008	.035	14
Centered Leverage Value	.007	.247	.052	.045	14

(a) Dependent Variable: S324