

Winter 1-1-2017

Influence of socio-environmental forces on use of e-learning by teachers in selected tertiary institutions in Oyo state, Nigeria

Funmilola Olubunmi Omotayo

University of Ibadan, Ibadan, Nigeria, lolaogunesan@yahoo.com

Wasiu Adewale Tihamiyu

University of Ibadan, twadewale@yahoo.com

Follow this and additional works at: <https://digitalcommons.kennesaw.edu/ajis>

 Part of the [Library and Information Science Commons](#)

Recommended Citation

Omotayo, Funmilola Olubunmi and Tihamiyu, Wasiu Adewale (2017) "Influence of socio-environmental forces on use of e-learning by teachers in selected tertiary institutions in Oyo state, Nigeria," *The African Journal of Information Systems*: Vol. 9 : Iss. 1 , Article 1.

Available at: <https://digitalcommons.kennesaw.edu/ajis/vol9/iss1/1>

This Article is brought to you for free and open access by DigitalCommons@Kennesaw State University. It has been accepted for inclusion in The African Journal of Information Systems by an authorized editor of DigitalCommons@Kennesaw State University. For more information, please contact digitalcommons@kennesaw.edu.





Influence of Socio-Environmental Forces on Use of e-Learning

Volume 9, Issue 1, January 2017, ISSN 1936-0282

Funmilola Olubunmi Omotayo

University of Ibadan
Ibadan, Nigeria
lolaogunesan@yahoo.com

Wasiu Adewale Tiamiyu

University of Ibadan
Ibadan, Nigeria
twadewale@yahoo.com

(Received December 2014/Accepted April 2016)

ABSTRACT

The study applied institutional theory to investigate socio-environmental factors [coercive pressures (CPs), normative pressures (NPs) and mimetic pressures (MPs)] influencing the use of e-learning by teachers of tertiary institutions in Nigeria. Survey research design was adopted. Purposive sampling was used to select three tertiary institutions, and proportionate to size sampling was used to select the respondents. Data were collected using a questionnaire. Frequency distribution and percentages, as well as multiple regressions were used for data analysis. The results revealed that CPs, in contrast to NPs and MPs had no significant relationship with attitude and intention to use e-learning. Attitude had a significant relationship with intention to use and also mediated between institutional forces and intention. Gender and age did not have significant relationships with intention but income had. NPs had the greatest impact on attitude and intention. The study demonstrated the importance of socio-environmental factors on adoption and use of e-learning in tertiary institutions in Nigeria.

KEYWORDS

E-learning, institutions, Nigeria, socio-environmental forces, teachers

INTRODUCTION

Information and Communication Technologies (ICT) has become a universal feature in every sphere of life, especially in education. The explosion of ICT as a result of advancements in Internet has provided a new trend for tertiary institutions to introduce new teaching and learning technologies by way of electronic learning (e-learning). ICT has been described as a very useful tool that enhances the process of teaching and learning (Drent and Meelissen, 2008; Kurt, 2012). In most developing countries like Nigeria however, the potential of ICT to support pedagogy is yet to be fully realized. Electronic learning, or e-learning is defined from different perspectives by various authors, but they all seem to agree that e-learning comprises all forms of electronically supported learning and teaching which are procedural in character and aim to affect the construction of knowledge with reference to individual experience, practice and knowledge of the learner (Adu et al., 2013; Salawudeen, 2010).

A number of studies have investigated the adoption and use of e-learning across countries. Majority of these studies focused on students (Hsiao, 2012; Huynh and Thi, 2014; Keengwe et al., 2009; Olatokun and Mala, 2012; Park, 2009; Qureshi et al., 2012), with much fewer focusing on the teachers (Al-Alak and Alnawas, 2011; Buchanan et al., 2013; Drent and Meelissen, 2008; Ferdousi and Levy, 2010; Kurt, 2012). Several factors influencing the adoption and integration of e-learning into teaching have also been identified by the researchers. For example, Kanwal and Rehman (2014); Lim and Chai (2008) pointed out organizational, individual, social and system factors. Zorn et al. (2011) highlighted technological, individual, organizational, institutional and non-institutional factors. Literature has established that social actors (e.g. individuals, groups and organizations) are likely to develop their beliefs, attitudes and behaviors to be consistent with those of their environments due to their exposure to their different social environments (Barley and Tolbert, 1997). Thus, individuals can form beliefs about e-learning adoption and use within a milieu of influences emanating from the institutional contexts in which they interact with technology systems (Jan et al., 2012). However, sparse research has actually empirically examined how such social forces shape individual beliefs about e-learning system adoption and use in different organizational settings.

Thus, this study uses institutional theory to examine empirical evidence of the influence of socio-environmental forces (labeled as INST forces) on individual beliefs about the intention to adopt and use e-learning in tertiary institutions in Nigeria. The study tries to improve understanding of the influence of these social forces on e-learning use within an institutional context. INST forces are socio-environmental forces that shape and influence people's perception and beliefs

toward the adoption and use of a technology system. They comprise three categories, labeled as coercive, mimetic and normative, that influence the perception and attitude of social actors toward adoption and use of some particular technology system (DiMaggio and Powell, 1983; Scott, 1995). They are processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behavior.

OBJECTIVES OF THE STUDY

The overall objective of the study is to investigate the relationship among INST forces, attitude and intention to use e-learning by teachers of some selected tertiary institutions in Oyo State, Nigeria. The specific objectives are:

- a. To examine the influence of coercive, normative and mimetic pressures on attitude of teachers to use e-learning at the institutions.
- b. To examine the influence of coercive, normative and mimetic pressures on intention to use e-learning by the teachers.
- c. To determine the influence of attitude on intention to use e-learning by teachers.
- d. To determine the moderating influence of demographic variables on intention to use e-learning by the teachers.
- e. To compare the relationship among demographic variables, INST forces, attitude and intention to use e-learning by the teachers of the institutions.

LITERATURE REVIEW

The rapid growth in ICTs has brought remarkable changes in the twenty-first century, as well as affected the demands of modern societies. ICTs are becoming increasingly important in daily lives and in educational system. There is a growing demand on educational institutions to use ICTs to teach the skills and knowledge students need for the 21st century and so educational institutions have restructured their curricula and classroom facilities, in order to bridge the existing technology gap in teaching and learning. This restructuring process requires effective adoption of ICTs into existing environment in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity (Tomei, 2005). One of the restructuring processes is the adoption of e-learning.

E-learning, in its broadest sense, refers to any learning that is electronically enabled. E-learning is an inclusive term that describes educational technology that electronically or technologically supports learning and teaching. It includes numerous types of media that deliver text, audio, images, animation, and streaming video, as well as technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as

local intranet/extranet and web-based learning. E-learning uses ICTs to facilitate access to online learning/teaching resources and provide students with collaborative environments and tools courtesy of Web 2.0 applications, which offers a set of tools and utilities that affect communication and its social impact (Lee and McLoughlin, 2011; Rossi 2009).

E-learning can occur in or out of the classroom. It can be self-paced, asynchronous learning or may be instructor-led, synchronous learning. E-learning is suited to distance learning and flexible learning, but it can also be used in conjunction with face-to-face teaching, in which case the term blended learning is commonly used. In e-learning, students do not have to be physically present but are linked to their teachers through the internet, intranet or extranet. It is an electronic learning environment where teachers and students are separated either by time, space or both, by using the internet or intranet infrastructure. The advantages that can be adduced to e-learning are numerous. Class work can be scheduled around work and family; reduces travel time and travel costs for off-campus students; afford students the option to select learning materials that meets their level of knowledge and interest and study anywhere they have access to a computer and internet connection; significant reduction or elimination of costs associated with instructor fees and materials, users progress is automated and can be monitored by or shared with one's supervisor, interactivity engages users, pushing them rather than pulling them through training. In addition, beginners or slower learners may determine their own pace and progress while eliminating frustration with themselves, their fellow learners, and the subject matter. In e-learning, knowledge is cumulative; lessons build upon one another and may be taken in any order, anytime-anywhere. Learning can greatly increase knowledge retention while learning is self-paced.

However, some demerits of e-learning have also been highlighted. E-learning is technology dependent. Learners will need access to technologies of minimum specifications as dictated by the e-learning supplier, or access to a service with a high bandwidth to transfer the course materials in a timely way. Some materials designed for one particular system may not function properly on another (for example, the Apple Macintosh and the Windows personal computers). E-learning is also unsuitable for certain types of training and learners. E-learning requires a high-level of self-discipline and personal time management. E-learners need to be highly self-motivated to take full advantage of the medium as often the online learning experience can be impersonal. The start-up cost of e-learning is expensive and the cost of production of online training materials is very high. Significant time needs to be invested in course set-up and in ongoing maintenance (checking links, updating course content etc.). Teachers must be confident that the

extra costs are balanced with the benefits of delivering a course online. Electronic communication does not necessarily provide a good match for face-to-face communication and it is more linear than face-to-face discussion. E-learning is also too reliant on ICT skills; learners with limited ICT skills may not be able to use it. People with visual or physical impairments may also be disadvantaged. Some studies have said that the electronic environment does not, per se, offer a pedagogically enhancing learning environment which Rubenstein (2003, p.1) called “education production function.”

E-Learning in Nigeria

E-learning is not a new phenomenon in promoting education in some parts of world and even in Nigeria. Presently, some institutions in Nigeria are using it to promote distance education and lifelong learning. Earlier, the e-learning techniques mostly adopted by many of Nigerian institutions are in the form of prepared lectures on a CD-ROM that can be played when the need arises. This method has limited advantage because of the number of students per computer system in addition to the fact that most of these facilities are not interactive enough compared with when lecture is being received in real time over the internet. The intranet facilities adopted in most schools were not well maintained because of its high cost of running especially in the absence of adequate power supply. Majority of students also could not afford to buy the ICTs needed and so had to visit public internet cafes. But this has its own challenges in that diverse people with diverse interests visit the cafes which make the environment not very conducive for learning. The bandwidth shared on various systems at the cafes is very low, hence, a multimedia interactive lecture will not be obtainable because of low bandwidth. With the advent of Global System for Mobile Communication (GSM), smartphones, I-pad, laptops, etc., however, e-learning is a lot easier now than before, as teachers can now communicate with students through these technologies.

In a country of various challenge dimensions, such as Nigeria, e-learning has emerged as a mediated form of instruction, and has all the attributes to become a major force in overcoming some of the serious challenges being faced by the Nigerian educational system. For example, in Nigeria, every year, over a million students apply for admission into various institutions in the country, but only few of them get admitted due to limited spaces available. The only alternative to accommodating the students that could not gain admission to the tertiary institutions is e-learning or distance education. As part of the Nigeria’s Federal Ministry of Education’s commitment to enhance creation and delivery through the application of ICTs, and also to merge with the national, regional and global developmental goals, huge investments in ICTs was made to deploy state-of-the-art e-learning facilities across the educational sector through public-private

partnership. This alignment was based on the National Open University of Nigeria (NOUN) establishing its coree-learning platform to fulfill the contemporary challenges of providing education for Nigerians--irrespective of their location. These developments opened an opportunity for the adoption of e-learning in delivering distance education to a vast number of Nigerians (Ajadi et al., 2008). The Nigeria National Universities Commission (NUC) also provided ICT facilities to all federal universities under the National Universities Network (NUNet) programme, which is another remarkable effort towards achieving e-learning in Nigerian tertiary institutions.

Presently, apart from NOUN, some institutions such as University of Ibadan, Obafemi Awolowo University, University of Jos, University of Benin, University of Abuja, University of Lagos, Regional Centre for Training in Aerospace Surveys (RECTAS), and Federal School of Surveying, Oyo, among others, have tapped into the benefits that e-learning offers and are using e-learning for teaching. These institutions use e-learning to deliver distance education and lifelong learning due to the fact that Nigerians struggle to obtain qualifications through tertiary education for social and occupational mobility. These institutions, by providing education through the e-learning platform aim to achieve the philosophical goal of the Nigerian National Policy on Education (Federal Republic of Nigeria, 2004) which stated in its section II that “government shall provide facilities and necessary infrastructure for the promotion of ICT at all levels of education” (p.15).

In spite of these achievements, e-learning has not fully developed in Nigeria due to a number of factors which have been identified. Irregular electricity supply is a perennial problem affecting almost every aspect of the Nigerian economy, including education. Many institutions have to depend on alternate power supply (generating plants, solar energy and inverter) with the attendant cost, to provide electricity. Other challenges are lack of computing skill/low computer literacy level, high cost of acquiring and installing technologies needed for e-learning and high internet access cost because internet access in Nigeria is through foreign gateways. Poor, inadequate or non-availability of internet access and limited bandwidth in some tertiary institutions, poor condition of existing telecommunication infrastructure, lack of affordable dedicated/specialized e-learning centers and limited expertise or technical staff in institutions to maintain the current system are other major factors (Aduke, 2008; Ajadi et al., 2008; Anene et al., 2014; Folorunso et al., 2006; Oye et al., 2011; Salawudeen, 2010). Technophobia is also a challenge that has been identified by Ajadi et al. (2008). Most students and even teachers have no computer education background; hence they are afraid of operating it. This makes some go to the extent of hiring experts, at a cost, to help carry out tasks that involve using ICTs. The very few who have access to computer do not know how to use some

packages thereby maximizing its use. Poor attitude is also a challenge that has been identified. ICTs give room to independent learning, but teachers and students are reluctant to take responsibility for their own learning (Ajadi et al., 2008).

These factors are identified as critical towards the acceptance of e-learning by students and teachers in Nigerian institutions. Despite these challenges, there is increasing awareness on the use of e-learning in teaching and learning. A rapidly growing number of tertiary educational institutions in Nigeria have been acquiring ICTs to promote distance education, but the number seems very low compared to other parts of the world. This is because the focus of most of the institutions is mainly to put up ICT centres and internet facility alone without considering other components that made up e-learning center. What then are the other factors that influence the adoption and use of e-learning in Nigeria tertiary institutions? The next section gives an exposition into this as discussed in the conceptual framework.

CONCEPTUAL FRAMEWORK

Many studies in the information systems field have investigated and identified many factors that explain users' technology and adoption behaviors (Davis et al., 1989; Lee et al., 2009; Ong et al., 2004; Raaij and Schepers, 2008; Sun et al., 2008). These studies have proposed models that can be used to understand e-learning usage. For example, Farida and Sridhar (2009) proposed an e-learning acceptance model (ELAM), based on UTAUT, which applied learning style of the student and teaching style of the teacher as mediators affecting the relation between performance expectancy beliefs and behavioral intention to use e-learning. However, these models mainly demonstrate the typical factors related to individual differences which significantly determine system adoption, while leaving out the socio-environmental forces that may influence the adoption and use of e-learning. Thus, studies on the influence of Institutional Theory (INST) factors in e-learning use are scanty.

The INST points out that the beliefs, attitudes and behaviors of individuals and organizations are strongly influenced by various networks and interactions (Scott, 2001). It addresses the role of institutions in understanding the behavior of social actors, and provides a perspective which can help assess the institutions' formal and informal rules that can strongly shape the beliefs, attitudes and behaviors of social actors in the institutions (North 1989; 1990). INST attends to the deeper and more resilient aspects of social structure and considers the processes by which structures, rules, norms, and routines become established as authoritative guidelines for social behavior (DiMaggio and Powell 1983; Oliver 1997a, 1997b). DiMaggio and Powell (1991); Lamb and Kling (2003); Scott (1995) viewed the

organization member as a social actor. They explain that there is the need for a complementary advance in the conceptualization of the user, which is the active agent in information system use.

INST also emphasizes the importance of the institutional environment in shaping organizational structure and behavior (Scott, 2001). This means that individuals in institutions are susceptible to changes in social structures which influence behavior and attitudes towards innovation. Scott (2004) said that when institutions are established, they become authoritative guidelines for social behaviors, and so organizational structures and processes become ingrained in the organization, and become 'taken for granted' as 'the way these things are done'. Therefore, the actors may not even realize that their behaviors are in fact partly shaped by institutions. In line with this, INST, as a theoretical framework, is also considered and applied to account for broader factors, institutional forces, rather than diffusion factors, that might influence the adoption and use of e-learning by teachers.

INST has been applied at different levels of analyses to study the adoption and use of several IT applications/innovations, such as Electronic Data Interchange (EDI) (Teo et al., 2003); Enterprise Resource Planning (ERP) (Ugrin, 2009) at the organizational level; internet banking (Shi et al., 2008); the use of the internet for teaching activities (Lewis et al., 2003), e-learning adoption and use (Jan et al., 2012). Liang et al. (2007) investigated the influence of external institutional pressures (mimetic, coercive and normative) on ERP assimilation. These studies assumed that rational choices or decisions to adopt innovations are made by actors to improve efficiency and effectiveness and to gain legitimacy in the environment in which the actors operate or interact.

Although INST has been mainly applied at the organizational level of analysis (DiMaggio and Powell, 1983; Villadsen et al., 2010), it is also applicable at the individual level (Jan et al., 2012; Shi et al., 2008). Shi et al., (2008, p. 275) argued that the individual is always cause as well as effect of the institution and "in the individual, the institutions exist as habit of mind and of action". Shi et al. (2008) noted that early INST, particularly in economics, was at the individual level of analysis. Individuals actually make an organization; and individuals tend to be influenced by the external environment and to adjust their behaviors accordingly. INST focuses on the individual preferences of action; thus, it supposes that, as a part of society, individuals' actions are influenced by a socially learned and acceptable pattern of behaviors (Hodgson, 2006). In other words, if people believe that others in their social environment will adopt the use of e-learning, they will also adopt it. Therefore, using this theory might be useful to inform the investigation of teachers' e-learning usage, particularly by identifying institutional forces that influence their attitude and behavioral intentions towards this innovation. INST thus offers a new lens of rigor to

examine the dynamics of adoption and use of e-learning. In recognizing the need to understand the underlying dynamics of e-learning adoption and use, and the social environment, a research model is developed as shown in Figure 1. In this framework, it is postulated that three institutional forces influence attitudes and intention to use e-learning, while some demographic characteristics also influence intention to use e-learning.

Institutional Forces

In this study, institutional forces are postulated as determinants of attitude. DiMaggio and Powell (1983) identified three main types of institutional pressures that lead to institutional isomorphism: coercive pressures (CPs), normative pressures (NPs) and mimetic pressures (MPs). DiMaggio and Powell (1983) explained that institutional structures affect actors through what they call “coercive” processes. On the middle ground, they envision “normative” controls of environments over actors, emphasizing the influence of professionalized standards. Moving to a more phenomenological perspective, they suppose that environments create standards that actors adopt “mimetically”, reflecting taken-for-granted standards. These pressures could be classified into three archetypes that guide organizations (individuals) toward isomorphism, namely (a) CPs stemming from political power exerted by higher authority; (b) NPs which arise from the norms embedded in the profession, and (c) MPs arising from the need to copy successful competitors in the uncertain environment.

CPs are both formal and informal pressures that are exerted on social actors to adopt certain behaviors and/or practices because they feel pressured to do so by more powerful actors (DiMaggio and Powell, 1983; Scott, 1995; 2001). In other words, CPs relate to the formal and informal pressures that result from coercive authority. It is therefore being posited that CPs may also come from individual’s dependency on other individual and the cultural expectations in the society in which the individual functions. Due to the nature of teaching, CPs can occur directly or indirectly in forms such as recommendations, promotions or threats to adopt a certain innovation or practice (Baker and Rennie, 2006). At the individual level, individuals may face CPs from other sources, like management directives, policies, commitment, and support. For example, employees may perceive CPs to use e-learning for on-the-job training when their manager has already been using e-learning or when the management directs that e-learning should be used in teaching.

NPs are associated with shared values and norms among members of networks through increased professionalization (DiMaggio and Powell, 1983). NPs, associated with the professionalization of fields and disciplines, occur when social actors voluntarily, but unconsciously, replicate other actors’ same beliefs, attitudes, behaviors and practices. NPs are similar to the influence of subjective

norms. The INST proposes that social actors are more likely to copy a certain action if that action has been taken by a large number of other actors. Social actors are then forced to adopt certain behavior due to their expectation for legitimacy and not necessarily for suitability (Flanagin, 2000). However, this copying or imitation is not coerced by any powerful actors, nor is it conscious; instead, attitudes, behaviors and practices demonstrated for a long time by most actors in the same social context become so legitimized as the 'right' way things are done that individuals often come to believe that these practices and behaviors indicate the only way to do things (Harcourt et al., 2005). The NPs may guide social actors who have not adopted the innovation to experience discord and hence discomfort, when peers whose approval they value, have adopted the innovation (DiMaggio and Powell, 1983; Jan et al., 2012). Several studies have demonstrated this imitation in the past. For example, Krassa (1988) suggested that decisions to undertake in a particular behavior depend on the considerable number of similar others in the environment which had already done likewise.

In the context of e-learning, NPs indicate that individuals will be more likely to adopt and use e-learning if they perceive that a considerable number of other individuals in their workplace or social network had already adopted e-learning, as individuals may be afraid that they will be lonely, do not belong and lack competitiveness if they do not adopt and use e-learning as others. Individuals may also not want to be termed 'old fashioned' if they do not follow the current trend. These phenomena were described as Bandwagon theories and theories of fads by Abrahamson and Rosenkopf (1993) and Abrahamson (1991) respectively. Teachers at the institutions may face NPs to use e-learning when their colleagues in the departments and faculties use e-learning to teach their courses.

MPs force social actors to seek examples of established behaviors and practices to follow through voluntarily and consciously copying the same behaviors and practices of other high-status and successful actors (DiMaggio and Powell, 1983), due to the belief that action taken by successful actors will be more likely to get positive outcomes. Individuals or organizations that perceive they are leaders in their fields might be especially prone to MPs (Flanagin, 2000). MPs are often associated with uncertain environment forces, in which actors behave or imitate successful peers as a safe strategy (DiMaggio and Powell, 1983). DiMaggio and Powell (1983) argued that uncertainty is a powerful incentive for imitation. This mechanism involves modeling or imitating the behavior of other actors in the environment, particularly those perceived to be similar and have higher status, prestige and success (DiMaggio and Powell, 1983; Scott, 2001). If such actors have already adopted or decided to adopt such technologies, this will exert MPs on other actors to do the same, due to the belief that actions taken by successful actors will more likely yield beneficial outcomes

(Gullkvist, 2011; Shi et al., 2008). In the context of e-learning, individuals may selectively imitate the attitudes and behaviors that have been adopted by higher status individuals. Individuals may believe that they may get promoted to a higher position by mimicking what their supervisors or high-ranking managers are doing, that is, benchmark learning.

Several studies on IT innovation adoption and use have examined the effect of the three institutional pressures as independent influential forces to explain the adoption and use of various IT applications. Some specific examples are internet banking adoption and use (Shi et al., 2008), ERP adoption and use (Ugrin, 2009), e-accounting diffusion (Gullkvist, 2011), and e-learning adoption and use (Jan et al., 2012). The findings of these studies demonstrate that the institutional pressures have uneven effects on the adoption and use of IT innovations. Gullkvist (2011) for instance, found that CPs and MPs were the main drivers of the diffusion of digital accounting practices. Shi et al., (2008) results revealed that NPs and CPs significantly influenced the attitude and intention to adopt internet banking, while MPs did not. Jan et al. (2012) found that NPs and MPs significantly influenced attitude and intention to adopt and use e-learning, while CPs did not. Thus, this provides strong support for the presence of institutional influences in the context of IT adoption and use. However, while these studies have generated important theoretical insights to understand the adoption of IT innovations (Henderson et al., 2011), the frameworks have received relatively less attention in the adoption and use of e-learning, particularly in developing countries.

Attitude and Intention

Attitude and intention are two variables that have been widely studied in the literature of technology acceptance. Attitude indicates a person's general feeling of favorableness or non-favorableness toward some particular technology system (Ajzen, 1991). It is "an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein and Ajzen, 1975, p. 216). Bhattacharjee and Premkumar (2004) submitted that attitude is a key construct that influence individuals' intention to use IT in organizations and is also considered a major factor affecting individuals' use of IT therefore, understanding individuals' attitude toward e-learning systems is important. Some empirical studies have actually demonstrated that attitudes of teachers towards technology greatly influence adoption and integration of technologies into teaching and that to successfully initiate and implement educational technology in school's program depends strongly on the teachers' support and attitude. It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning (Buabeng-Adoh, 2012; Ferdousi and Levy, 2010).

Behavioral intention refers to a user's intention to use a technology system. Behavioral intention encompasses the user's motivational factors that influence technology system usage behavior. Attitude is the degree to which the individual is interested in specific systems, which has a direct effect on the intention to use as well as actual use of those systems (Davis et al., 1989). Thus, the extent to which systems are actually used over a certain period of time is influenced by the intention to use. Empirically, several studies have also confirmed that attitude has a significant influence on the intention to accept e-learning system usage (Hsia et al., 2012; Kanwal and Rehman, 2014; Raaij and Schepers, 2008).

Based on review of factors influencing attitude and intention to use e-learning, we therefore postulate institutional forces as determinants of attitude and intention; attitude as determinants of Intention, and thus formulate the following hypotheses:

- Ho1: There is significant relationship between CPs and attitude of teachers towards use of e-learning.
- Ho2: There is significant relationship between NPs and attitude of teachers towards use of e-learning.
- Ho3: There is significant relationship between MPs and attitude of teachers towards use of e-learning.
- Ho4: There is significant relationship between CPs and intention of teachers to use e-learning.
- Ho5: There is significant relationship between NPs and intention of teachers to use e-learning.
- Ho6: There is significant relationship between MPs and intention of teachers to use e-learning.
- Ho7: There is significant relationship between attitude and intention of teachers to use e-learning.

Control Variables

Studies have shown that demographic variables, such as age and gender may have the potential to influence e-learning adoption and use, especially when social forces are considered. Jan et al. (2012) included age, gender and income in their research model as control variables and found that these demographic characteristics had no significant impact on intention to use e-learning. Therefore age, gender and income have therefore been included in the model for this study as control variables to determine the effects of these variables on intention of the teachers to use e-learning. There have been many studies on the influence of age on adoption and use of technology, as well as e-learning. Beatty and Smith (1987) submitted that age affects people's attitude and behavior. As people age, they show greater reluctance to adopt new

technologies (Gilly and Ziehl, 1985). Botwinick (1973) supported that older people tend to be more cautious and seek greater certainty than younger people before they act, thus increasing their commitment to their existing behavioral patterns. Pommer et al. (1980) state that the elderly exhibits more negative perceptions toward new technologies, while Morris and Venkatesh (2000) stated that older individuals tend to be more likely to be salient to social influences. Some studies have consistently demonstrated that physical activity declines with age. The eighth hypothesis is postulated as:

Ho8: There is significant relationship between age of teachers and their intention to use e-learning.

Gender differences and the use of ICT have been reported in several studies. However, gender effects on e-learning adoption and use from educators' perspectives have seldom been explored (Okazaki and dos Santos, 2012). Studies concerning teachers' gender and ICT use have cited female teachers' low levels of computer use due to their limited technology access, skill, and interest (Volman and van Eck, 2001). Kay (2006); Okazaki and dos Santos (2012); Wozney et al. (2006) found that male teachers use more ICT in their teaching and learning processes than their female counterparts. Similarly, Markauskaite (2006) revealed significant differences between males and females in technical ICT capabilities, with males' scores higher than those of females.' Jamieson-Proctor et al. (2006) found that female teachers were significantly less confident than their male counterparts in using ICT for teaching and learning. This has been adduced to females' greater reliance on ease of use due to their lower level of computer literacy and males' greater emphasis on perceived usefulness in determining behavioral intention (Mazman, 2011; Yuen and Ma, 2008). Similarly, Venkatesh and Morris (2000) stated that women tend to be slightly more persuasive than men and more sensitive to others' opinions and thus more salient to social influences. Ong and Lai (2006) also found that men's perceptions of usefulness were more significant and more salient than women's in determining behavioral intention to use e-learning. Thus, we postulate that:

Ho9: There is significant relationship between gender of teachers and their intention to use e-learning.

Income has been considered to have a relationship with use of e-learning by teachers (Jaggars, 2011; Hagos and Negash, 2014). Income can be closely related with the opportunity cost of time, so as income increases, the perception of the value of time changes. Economic studies indicate that high-income individuals exhibit a high valuation of time (Goldman and Johansson, 1978; Stigler, 1961), thus the usage of e-learning may bring more benefits to those individuals. For example, the opportunity cost of time associated with searching for literature on the Internet may thus influence the intention to adopt and use e-learning in teaching. As such, people with a higher income will prefer the Internet to search

for literature and to teach, because of the time saving feature of the Internet. Therefore, this factor may suggest that teachers may be more inclined to adopt e-learning. Therefore, income is considered as one of the control variables in the adoption and use of e-learning because individuals with higher incomes are more likely to adopt e-learning. Considering the nature of the environment where this study was carried out, even though the surveyed institutions have adopted e-learning in teaching, but some facilities needed to successfully use e-learning in teaching are either inadequate or lacking. Electricity supply for instance is erratic and internet access is also unreliable and inadequate, in addition to being very expensive. As a result, some teachers make provision for alternate power supply on their own as well as procuring personal internet facility (modem and access time) in order to be able to use e-learning for their teachings. It is therefore hypothesized that:

Ho10: There is significant relationship between income earned by teachers and their intention to use e-learning.

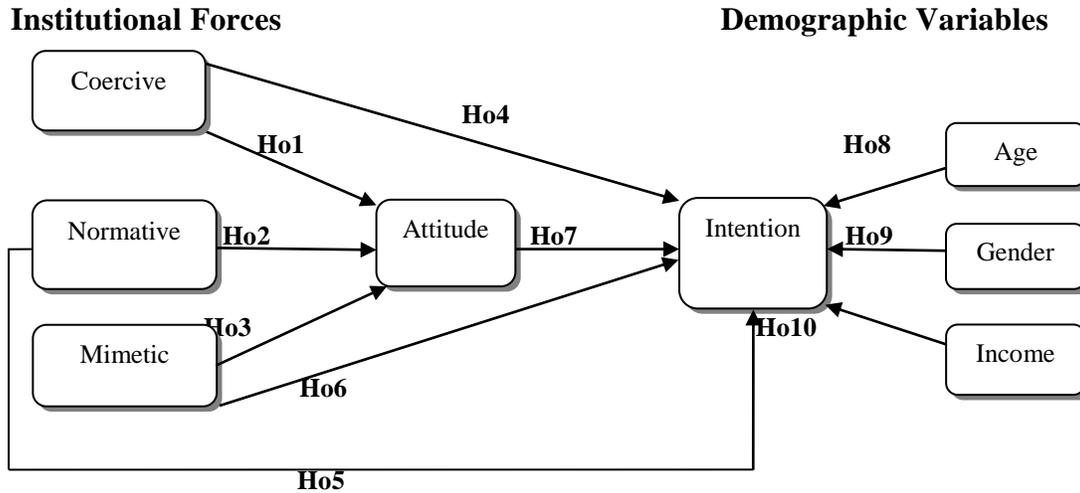


Figure 1: Research Model [Adopted from Jan et al., (2012)].

METHODOLOGY

Location, Research Design and Population of the Study

This study was carried out in Oyo State, Southwest Nigeria. Situated in the state are four universities, one Polytechnic, two colleges of Education and some Monotechnics. The study area was chosen by the researchers for convenience and to reflect the heterogeneous nature and composition of levels of tertiary education in the state. A sample survey was adopted for the research design while multistage sampling technique was adopted in sample selection. First, three tertiary institutions, the University of Ibadan (UI), The Polytechnic of Ibadan (PI) and Emmanuel Alayande College of Education, Oyo (EACOED), were purposively selected. They were purposively selected because they represent the three main levels of tertiary education institutions in Nigeria – university, polytechnic and college of education. The three institutions are also the oldest tertiary institutions in the area of study. In addition, each of these institutions had implemented e-learning and teachers of the institutions use e-learning facilities for teaching. Second, proportionate to size sampling procedure was used to select the respondents from the population of teachers on full-time employment in the three institutions. The population of teaching staff of UI was obtained from the University’s registry while that of the PI and EACOED were obtained from the Ministry of Education, Oyo State, Nigeria. The number of teaching staff obtained at the registry of UI was 1173 while 568 and 327 were obtained from Oyo State Ministry of Education for the PI and EACOED. Fifteen percent (15%) of the

population of teachers in each of the tertiary institutions was selected to get the target sample size of 310.

Instrument Design and Administration

The collection of data was carried out with the use of a structured questionnaire owing to its usefulness as a tool for gathering data from large number of participants within a short period and it's having been used successfully in previous similar studies. The items in the questionnaire consist of items adopted from previous similar studies which were slightly amended to conform to the objectives of this study. Face validity of the instrument was established by the research specialists at the Africa Regional Centre for Information Science, and the Faculty of Education, both at the University of Ibadan, Nigeria. The questionnaire was structured into two sections. Section 1 was used to collect demographic data. Section 2 has 16 items which collect data on CPs, NPs, MPs, attitude and intention. The respondents were asked to rate their opinions using a five-point Likert scale. The variables used in the study were mainly adapted from Jan et al. (2012). The items used to operationalize the constructs were adapted from Teo et al. (2003); Liang et al. (2007); and Jan et al. (2012) and modified for use in the context of this study. To ensure that the study meets ethical expectations, the details of the objectives, rationale and methodology of the study were disclosed to the respondents. They were also informed of their freedom to participate in the study or otherwise. For those that chose to participate, anonymity was ensure by requesting them not to write their names on the questionnaire.

The services of two trained research assistants were employed for data collection. In all, 310 copies of the questionnaire were administered during the month of January-March, 2014. Out of this number, only 293 copies were returned, out of which 284 copies were found useful for data analysis, giving a 92% response rate. Nine copies of the questionnaire were invalid because they were not properly completed. From a five-point Likert scale, the responses were re-coded to a three-point scale type for ease of description. Cronbach's alpha analysis was used to test the items for each of the five constructs for internal consistency and reliability, and the alpha coefficients were CPs (0.816), NPs (0.775), MPs (0.673), attitude (0.681) and intention (0.932). Data was analyzed using Statistical Package for Social Science (SPSS) version 16.0. Frequency and percentage distribution was ran for the demographic profile of the respondents while the ten hypotheses were tested using multiple regression analysis. The pre-set level of significance is 0.05. All hypotheses stated were tested in null form. The null hypotheses assume that there are no significant relationships between the independent and dependent variables, while the alternative hypotheses assume that there are significant relationships between the variables. If p value is less than

0.05, the alternative hypotheses will not be rejected whereas the null hypotheses will be rejected and vice-versa.

RESULTS

The Demographic Characteristics (DCs) of the respondents is presented in Table 1.

Variables	Measures	Frequency	Percentage (%)
Gender	Male	176	62.0
	Female	108	38.0
Age	21-30 years	45	15.8
	31-40 years	92	32.4
	41-50 years	63	22.2
	51 and above years	84	29.6
Category of Staff	Academic Staff	284	100.0
	Non Academic Staff	0	0
Rank	Assistant Lecturer	6	2.1
	Lecturer II	65	22.9
	Lecturer I	52	18.3
	Senior Lecturer	88	31.0
	Principal Lecturer/Reader/ Associate Professor	42	14.8
	Chief Lecturer/Professor	31	10.9
Educational Qualification of Respondents	Bachelor degree	8	2.8
	Master's degree	90	31.7
	Ph.D	137	48.2
	Post Ph.D	49	17.3
Numbers of Years in Service	1-5 years	14	4.9
	6-10 years	74	26.1
	11-15years	65	22.9
	Above 15 years	131	46.1
Income Per Month	Less than ₦100,000	94	33.1
	₦100,000 - 200,000	84	28.5
	₦201,000 and above	109	38.4

Table 1: DCs of respondents at the three institutions in Oyo State, Nigeria

Table 1 shows the profile of the respondents. Sixty two per cent were male while 38.0 percent were female. Majority of the respondents (about 84.0 per cent) were above the age of 30. All respondents were academic staff with majority of them (75.0 per cent) above the rank of Lecturer II or its equivalent. Majority of the respondents had qualifications above the first degree, and had above 5 years work experience. About 67.0 per cent earned an income of ₦100,000 (about 300 USD) and above.

Test of Hypotheses

In this section, we present the results on the test of hypotheses. Table 2 shows the results of regression analysis of relationships among CPs, NPs, MPs and Attitude of teachers towards e-learning usage.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.681	.587		13.082	.000
	Coercive Pressures	-.061	.066	-.044	-.917	.360
	Normative Pressures	1.070	.088	1.038	12.093	.000
	Mimetic Pressures	-.603	.074	-.705	-8.153	.000

a. Dependent Variable: Attitude

Table 2: Regression analysis of INST forces and attitude of teachers towards use of e-learning at the institutions

The results in Table 2 depict that CPs did not have significant relationship with the Attitude of the teachers to use e-learning at the institutions ($B=-0.61, p >0.05$). Hence, the null hypothesis 1 not rejected. On the contrary, the results indicate that both NPs and MPs had significant relationships with the Attitude of the teachers to use of e-learning ($B=1.070, p <0.05$; $B=-.603, p <0.05$). Therefore null hypotheses 2 and 3 are rejected, and alternative hypotheses accepted.

The results of regression analysis of INST forces (CPs, NPs, MPs and Attitude), and intention of teachers to use e-learning is presented in Table 3.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.392	.298		4.674	.000
	Coercive Pressures	.044	.026	.049	1.653	.099
	Normative Pressures	.234	.044	.349	5.373	.000
	Mimetic Pressures	-.127	.033	-.228	-3.864	.000
	Attitude	.480	.024	.736	20.095	.000

a. Dependent Variable: Intention

Table 3: Regression analysis of the relationships among INST forces, Attitude and intention to use e-learning by teachers of the institutions

The analysis revealed that CPs did not have significant relationship with the intention of the teachers to use e-learning ($B=-0.44, p >0.05$). Hence, null hypothesis 4 is not rejected. But the results show that NPs, MPs, as well as Attitude had significant relationships with intention to use e-learning ($B=0.234, p <0.05$; $B=-0.127, p <0.05$; $B=-0.480, p <0.05$). Therefore null hypotheses 5, 6 and 7 are rejected. This means that while CPs did not have significant relationship with the intention of the teachers to use e-learning, while NPs and MPs as well as Attitude had significant relationships with intention of the teachers to use e-learning.

Table 4 presents the results of the regression analysis of DC and intention to use e-learning by teachers of the institutions

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	Age	-.144	.081	-.144	-1.780	.076
	Gender	.148	.126	.067	1.177	.240
	Income Level	-.229	.102	-.180	-2.234	.026

a. Dependent Variable: Intention

Table 4: Regression analysis of DC and intention to use e-learning by teachers of the institutions

The results shows that only income had significant relationship with intention ($B=-.229, p <0.05$) while the other two demographic variables (gender and age) had no significant relationships with intention to use e-learning. Hence null hypotheses 8 and 9 are not rejected while null hypothesis 10 is rejected.

Comparative analysis of relationship between INST forces and attitude towards e-learning by teachers at the three institutions

Further analyses were carried out to compare the results among the three institutions to know if there were differences or similarities. Table 5 presents the results of regression analysis of the relationships between INST forces and Attitude of teachers towards e-learning at the three institutions.

	UI			PI			EACOED		
	B	Beta	Sig	B	Beta	Sig	B	Beta	Sig
(Constant)	8.630		.000	4.202		.000	.441		.732
Coercive Pressures	-.056	-.043	.503	-.084	-.068	.415	.408	.239	.005
Normative Pressures	.960	1.052	.000	1.653	1.221	.000	1.624	1.190	.000
Mimetic Pressures	-.654	-.830	.000	-.658	-.709	.000	-.625	-.590	.000

a. Dependent Variable: Attitude

Table 5: Regression analysis of INST forces and attitude of teachers towards use of e-learning at the three institutions

The results in Table 5 reveal that CPs had no significant relationships with Attitude of teachers to use e-learning at the UI and the PI ($B = -.056, p > 0.05$; $B = -.084, p > 0.05$), but show significant relationships with Attitude of teachers at the EACOED. However, NPs and MPs had significant relationship with Attitude of teachers towards use of e-learning at the UI, the PI, as well as EACOED.

Comparative analysis of relationship among DC, INST forces, attitude; and intention to use e-learning by teachers at the institutions

Table 6 present the results of regression analysis of relationships among DCs, INST forces, Attitude and Intention to use e-learning by teachers of the institutions.

	UI			PI			EACOED		
	B	Beta	Sig	B	Beta	Sig	B	Beta	Sig
(Constant)	2.556		.000	1.621		.017	-.847		.284
Gender	-.065	-.029	.470	.070	.036	.458	-.107	-.046	.378
Age	-.071	-.073	.253	-.011	-.011	.858	-.179	-.181	.005
Income Level	-.018	-.013	.840	-.101	-.081	.307	.343	.269	.001
Coercive Pressures	-.002	-.002	.958	-.005	-.006	.908	.008	.007	.896
Normative Pressures	.216	.372	.000	1.033	1.154	.000	-.165	-.178	.192
Mimetic Pressures	-.156	-.311	.000	-.422	-.689	.000	.159	.220	.018
Attitude	.458	.719	.000	.163	.247	.001	.780	1.145	.000

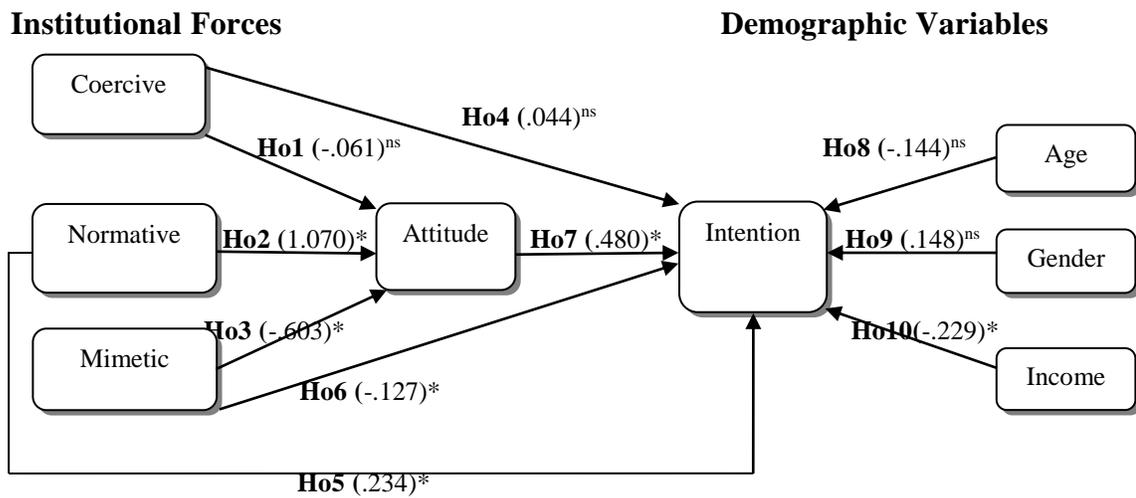
a. Dependent Variable: Intention

Table 6: Regression analysis of relationships among DCs, INST forces, attitude and intention

Comparing the three institutions, the results in Table 6 show that demographic characteristics (gender, age and income) had no significant relationships with intention to use e-learning by the teachers at the UI, and the PI ($p > 0.05$); except at the EACOED where age and income showed significant relationships with intention to use e-learning. The results also reveal that CPs did not have any significant relationship with intention to use e-learning at the three institutions. NPs had significant relationship with intention only at the UI and the PI ($p < 0.05$), while the relationship between NPs and intention to use e-learning at the EACOED was not significant ($B = -.165$; $p > 0.05$). The results also reveal that MPs and Attitude had significant relationships with the teachers' intention to use e-learning at all the three institutions ($p < 0.05$).

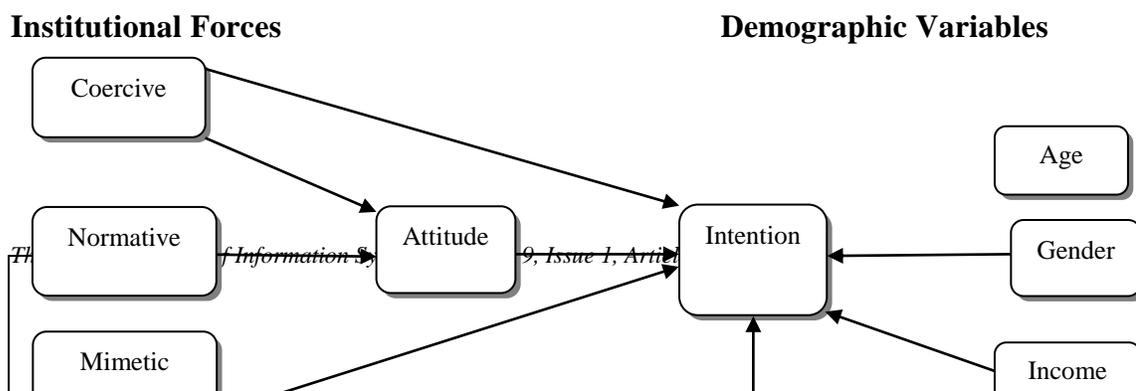
Resultant Models

Figures 3, 4 and 5 present the resultant models that detail the relationships among the variables. While figure 2 presents the relationships among the variables across the three surveyed institutions, figures 3, 4 and 5 present the relationships in UI, PI and EACOED respectively.



Note: * = significant; ns = not significant

Figure 2: Resultant Model for the three institutions



Journal of Information Systems, 9, Issue 1, Article 1

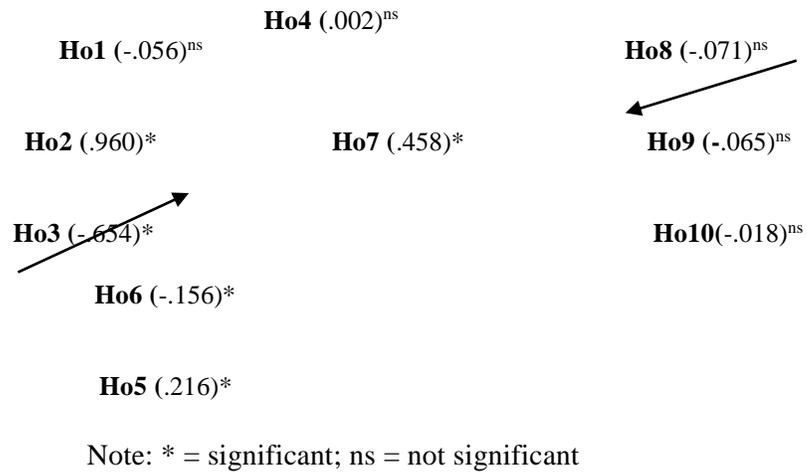


Figure 3: Resultant Model for the University of Ibadan

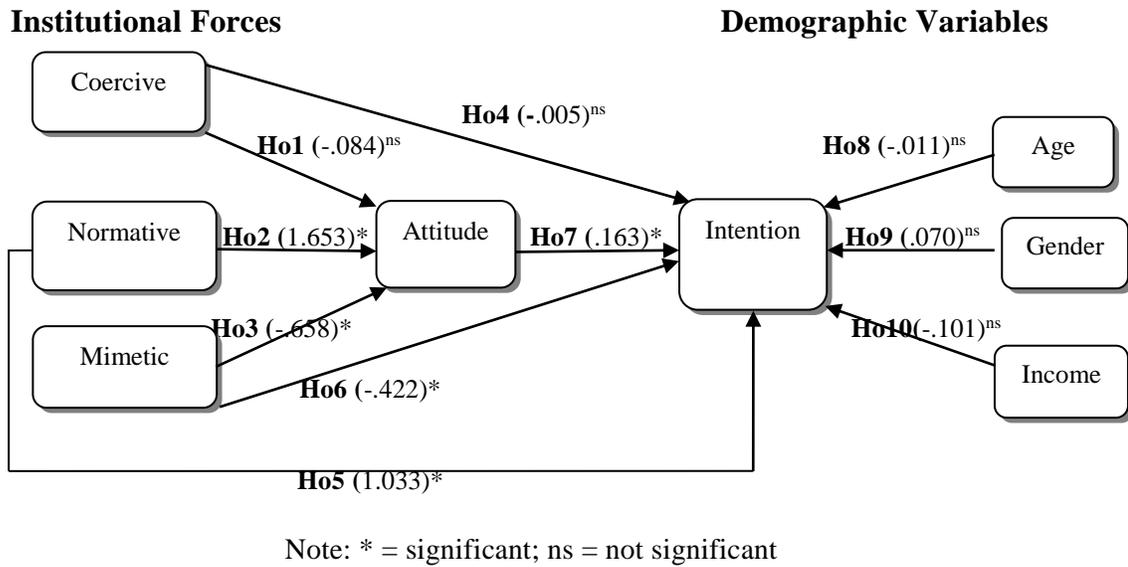
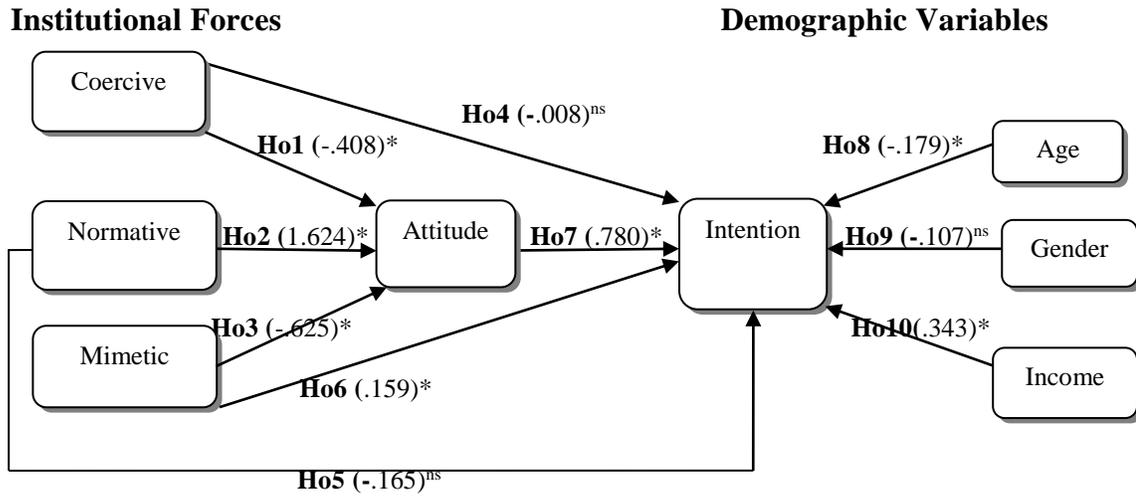


Figure 4: Resultant Model for the Polytechnic, Ibadan.



Note: * = significant; ns = not significant

Figure 5: Resultant Model for Emmanuel Alayande College of Education

DISCUSSION OF FINDINGS

In the context of this study, CPs represent both formal and informal pressures exerted on social actors to adopt the same attitudes, behaviors and practices, because they feel pressured to do so by more powerful actors. The regression analysis results on the relationship between CPs and Attitude; and CPs and Intention reveal that CPs did not have significant relationship with attitude as well as intention (Table 2 and 3). When the results of three institutions were compared, it was revealed that CPs showed significant relationships with attitude only at the EACOED (Table 5); however the relationship between CPs and intention was not significant at the three institutions (Table 6).

In relation to similar studies, the results from this study confirm the findings of Wang and Cheung, 2004 that CPs had no significant influence on attitude and intention to adopt and use e-learning in an institutional setting. The results also corroborate the findings of Jan et al. (2012) who found that coercive institutional forces did not have significant influence on attitude or intention of using e-learning by their respondents from private companies, research institutes and the public sector, but found significant influence on e-learning use directly. That is, coercive forces had direct significant influence on e-learning adoption and use when not mediated by attitude. However, the results of this study contrast the findings of Shi et al. (2008) who found that CPs significantly influence the

attitude and intention of adopting internet banking, and Alamin (2013) who found CPs as a factor that influenced accountants' behavioral intention towards the adoption and use of accounting information system technology in Libyan industrial companies. Gullkvist (2011) also found that CPs were one of the main drivers of diffusion of digital accounting practices. This result is therefore an exposition to policy makers in the area of ICT adoption and use that CPs may not be enough reason to make people to adopt the use of a technology.

Furthermore, this study found positive and significant relationships between NPs and attitude as well as NPs and intention to use e-learning (Table 2 and 3). This signifies that if NPs were increased, the attitude and the intention of the teachers to use e-learning would also increase. The regression analysis also shows significant relationships between NPs and attitude as well as NPs and intention when the three institutions were compared, except at the EACOED where there was no significant relationship between NPs and intention (Table 5 and 6). This result corroborates the findings of Jan et al. (2012) which reveal that NPs had significant influence on attitude and intention to use e-learning. Jan et al. (2012) found that NPs had significant influence on attitude and intention to use e-learning and the influence of normative forces on e-learning is completely mediated by attitude. Findings also relate to the results of Shi et al. (2008) who found that NPs significantly influenced attitude and intention to adopt internet banking.

NPs occur when people voluntarily, but unconsciously, force themselves to replicate certain beliefs, attitudes, behaviors and practices of others, if that action has been taken by a large number of other people. However, this copying or imitation is not coerced by any powerful actors, but stemmed from a belief that the attitudes, behaviors and practices, having being demonstrated for a long time by most actors in the same social context, is the legitimized and right way things should be done. The results equally reveal that NPs had the greatest impact on Attitude and Intention among the three INST forces. The implication of this is that NPs is considered the strongest force, of the three institutional forces, that influenced attitude and intention of the teachers to use e-learning. Therefore, it would be more efficient for training managers to exert NPs more than MPs and CPs to promote adoption and use of e-learning among tertiary institutions teachers. Training managers may need to work on improving normative forces by building an e-learning community and conduct referral champions within the institutions to create normative expectations.

In addition, it was found that MPs had significant relationship with attitude and intention to use e-learning by the teachers. The result is consistent with the findings of studies conducted by Jan et al. (2012) that MPs had significant influence on attitude and intention to use e-learning. Gullkvist (2011) equally found that MPs were one of the main drivers of the diffusion of digital

accounting practices. But these results contradict Alamin (2013) who found MPs to be insignificant contributing factor that influenced accountants' behavioral intention towards the use of accounting information system technology. The findings suggest that individuals that perceive they are leaders in their fields might be prone to MPs. In the context of e-learning, MPs force the teachers to seek examples of established behaviors and practices to follow through voluntarily and consciously copying the same behaviors and practices of other high-status and successful colleagues due to the belief that action taken by successful colleagues will be more likely to get positive outcomes. In the institutions, junior teachers may selectively imitate the attitude and behavior that had been adopted by higher status teachers because of the belief that they may get promoted to the higher position by mimicking what their higher status teachers are doing. Therefore, the teachers will be more likely to adopt and use e-learning if they perceive their superiors are already using e-learning. Some teachers may imitate the attitude and behavior that have been adopted by higher status individuals in their institutions (e.g. heads of department, Deans, etc.) because of the belief that they may get admiration, favor or promotion from the higher status individuals/managers for copying what they are doing.

However, findings reveal that the B coefficients of the relationships among MPs, attitude and intention are negative (-.603 and -.127 respectively). This implies that if there is a decrease in MP, there would be an increase in the teachers' attitude and intention towards e-learning use, and if MP is increased, the teachers' attitude and intention would decrease. The implication of these results is that MPs alone may not be sufficient to influence the attitude and intention of the teachers to adopt e-learning. Even though the teachers could imitate the behavior of high-status and successful colleagues who are using e-learning, this force is not so strong. Some of the teachers may not be favorably disposed to copying or imitating others. These findings therefore, suggest that it would be more efficient for training managers to exert MPs in addition with NPs promote the use of e-learning among tertiary institutions teachers.

Findings also show that attitude had a positive and significant influence on intention to use e-learning, and also mediates between institutional forces and intention to use e-learning. Empirically, several studies have also confirmed that attitude had a significant influence on the intention to accept computer and e-learning system usage (Ferdousi and Levy, 2010; Huang and Liaw, 2005; Jan et al., 2012; Kurt, 2012; Ong et al., 2004). Ferdousi and Levy (2010) found that attitude had significant effects on the intention of community college instructors to use e-learning systems, just as Jan et al., (2012) equally found that the attitude of the learners from the organizations they studied positively influenced their intention to accept e-learning system usage.

Gender was found not to have any significant relationship with intention to use e-learning by the teachers. This is also the case when the three institutions were compared. The result is consistent with the results of Jan et al. (2012) who found that gender, demonstrated no significant impact on the intention to use e-learning. The results are also in line with Alamin (2013); Cheng et al. (2011); Norris et al. (2003). Cheng et al. (2011) found that age, gender, prior experience, and work experience had no significant influence on attitude and intention to use e-learning, and Norris et al. (2003) revealed that gender was not a predictor of ICT integration into teaching. Alamin (2013) also did not find gender to be a statistically significant contributor that influenced accountants' behavioral intention towards the adoption of accounting information system technology in Libyan industrial companies.

Even though gender differences and the use of ICT have been reported in several studies, findings from this study contradict some of the findings from these studies. Volman and van Eck (2001) found female teachers' low levels of computer use due to their limited technology access, skill, and interest. Some other studies have revealed that male teachers used more ICT in their teaching and learning processes than their female counterparts (Kay, 2006; Wozney et al., 2006). Kay (2006) found that male teachers had relatively higher level of computer attitude and ability before computer implementation, but there was no difference between males and females regarding computer attitude and ability after the implementation of the technology. This therefore suggests that there may be no need to segment in terms of gender when promoting e-learning on-the-job training especially in tertiary institutions.

The age of the respondents was found to have no significant relationship with intention to use e-learning. However, when the results from the three institutions were compared, age was found to have significant relationship with use intention of the teachers at the EACOED although the relationship was negative. This means that the lower the age of the teachers at the EACOED, the greater their intention to use e-learning. So many studies have actually predicted that younger people tend to use technology more than older people (e.g. Selwyn and Gorard, 2008) and some previous studies have equally found contradictory results on the relationships between age and use intention. Jan et al. (2012) found that age demonstrated no significant impact on the intention to use e-learning. Similarly, Cheng et al. (2011) found that age had no significant influence on attitude and intention to use e-learning. Norris et al. (2003) study revealed that age was not a predictor of ICT integration into teaching. This finding suggests that e-learning policies and management may not need to be segmented in terms of age when promoting e-learning in institutions. Teaching is considered the primary duty of teachers and in effect, e-learning is a tool that facilitates effective and efficient teaching and so the adoption and use of e-learning is ordinarily not

expected to be influenced by age of the teachers as long as the teachers are still in service.

Moreover, the results reveal that income earned had a negative and significant relationship with intention of the teachers to use e-learning. This means that the lower the income, the higher the intention to use e-learning. In other words, low income might not necessarily affect the intention of teachers to use e-learning. But looking at the three institutions separately, no significant relationship was observed between income and intention to use e-learning by teachers at UI and PI, whereas, income had a positive and significant relationship with intention of the teachers at EACOED to use e-learning. This means that an increase in income of the teachers at the EACOED would result into an increase in their intention to use e-learning. The reason for this observed result in only one of the three institutions could be as a result of salary and emolument disparity. The salary structures of the University and Polytechnic are a little bit better than that of Colleges of Education and so the teachers at the latter institution may perceive income as a challenge to their use of e-learning. In addition, Universities and Polytechnics are better funded in Nigeria than the Colleges of Education in terms of ICT infrastructures. This result corroborates the assertion that, individuals with high income may perceive higher time value; thus, the usage of e-learning may bring more benefits to those individuals (Goldman and Johansson, 1978; Stigler, 1961). It is also partly in support of the findings of Jan et al. (2012) which found no significant influence of income on the intention to use e-learning.

LIMITATIONS AND DIRECTION FOR FUTURE STUDY

There is no gainsaying the fact that this study significantly contributes to body of literature and provides valuable insights into the factors that influenced the use of e-learning by tertiary institutions teachers, although with some limitations. In the first place, the population of study is restricted to full-time teachers in three institutions of higher learning in the same geographical area. Secondly, the sample size is small, making the findings not generalizable. As a result of these limitations, the following suggestions are made for further studies. Future studies may (i) use more variables, including individual and technological factors as predictors to provide better explanatory power for e-learning behaviors, (ii) expand the scope of this study by a comparative study of students' and teachers' use of e-learning and at the same time extend the coverage to other regions of the country. Furthermore, a major finding from this study is that CPs do not influence attitude and use intention of e-learning in the institutions. Future studies might probe further why this is so.

CONCLUSION

The research model developed for this study has been validated in that, institutional forces (NPs and MPs) influence intention to use e-learning through attitude on one hand, and also that demographic factor (income) relate at the other end to use intention. Therefore, the findings demonstrate the inevitability of social influence in the quest to promote adoption and use of e-learning in tertiary institutions, in that not only technological factors are necessary to facilitate adoption and use of e-learning but also that INST forces are equally worthy of consideration and should be given priority. This study contributes to the studies of Shi et al. (2008); Jan et al. (2012); Alamin (2013), in applying the INST theory at the individual level, unlike most previous studies, which applied INST theory at the organizational level. The study also contributes to the technology acceptance literature by revealing that institutional forces can also influence adoption of technology. Although previous studies also investigated social forces, such as social norms and image, the model in this study incorporated a richer set of social forces with expanded depth and breadth. These findings would help academics, educators, and policy makers to better understand the mechanism of e-learning adoption and use in tertiary institutions in Nigeria and other parts of the world.

REFERENCES

- Abrahamson, E. (1991) Managerial fads and fashions: the diffusion and rejection of innovations, *Academy of Management Review*, 16, 586-612.
- and Rosenkopf, L. (1993) Institutional and competitive bandwagons: using mathematical modeling as a tool to explore innovation diffusion, *Academy of Management Review*, 18, 3, 487-517.
- Adu, E. O., Eze, I. R., Salako, E.T. and Nyangechi, J. M. (2013) E-learning and distance education in Nigeria, *International Journal of Science and Technology*, 2, 2, 203-210.
- Ajzen, I. (1991) The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 2, 179-211.
- Aduke, A. F. (2008) Usage and challenges of information and technology (ICT) in teaching and learning in Nigerian universities, *Asian Journal of Information Technology*, 7,7, 290-295.
- Ajadi, T. O., Salawu, I. O. and Adeoye, F. A. (2008) E-learning and distance education in Nigeria, *The Turkish Online Journal of Educational Technology*, 7, 4, 7, 61-70.
- Alamin, A. A. K. (2013) Investigating factors influencing the adoption of AIS: Libyan accountants' perspective, Doctoral thesis submitted at Faculty of Business and Law, Deakin University, Melbourne, Australia, April, 2013, xviii+210p.
- Al-Alak B. A. and Alnawas L. A. M. (2011) Measuring the acceptance and adoption of e-learning by academic staff, *Knowledge Management and E-Learning: An International Journal*, 3, 2, 201-221.
- Anene, J. N., Imam, H. and Odumuh, T. (2014) Problem and prospect e-learning in Nigerian universities, *International Journal of Technology and Inclusive Education (IJTIE)*, 3, 2, 320-327.
- Bagozzi, P. R. and Yi, Y. (1989) The degree of intention formation as a moderator of the attitude-behavior relationship, *Social Psychology Quarterly*, 52, 4, 266-279.
- Baker, R. O. N. and Rennie, M. D. (2006) Forces leading to the adoption of accrual accounting by the Canadian federal government: an institutional perspective, *Canadian Accounting Perspectives*, 5, 1, 83-112.
- Barley, S. R. and Tolbert, P. S. (1997) Institutionalization and structuration: studying the links between action and institution, *Organization Studies*, 18, 1, 93-117.
- Beatty, S. and Smith, S. (1987) External search effort: an investigation across several product categories, *Journal of Consumer Research*, 14(June), 83-95.

- Bhattacharjee, A. and Premkumar, G. (2004) Understanding changes in belief and attitude toward information technology usage: a theoretical model and longitudinal test, *MIS Quarterly*, 28, 2, 229-254.
- Botwinick, J. (1973) *Aging and behavior*, Springer, New York.
- Buabeng-Adoh, C. (2012) Factors influencing teachers' adoption and integration of information and communication technology into teaching: a review of the literature, *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 8, 1, 136-155.
- Buchanan, T., Sainter, P. and Saunders, G. (2013) Factors affecting faculty use of learning technologies: implications for models of technology adoption, *Journal of Computing in Higher Education*, 25, 1, 1-11.
- Cheng, B., Wang, M., Yang, Stephen, J. H., Kinshuk and Peng, J. (2011) Acceptance of competency-based workplace e-learning: effects of individual and peer learning support, *Computers and Education*, 57, 1317-1333.
- Davis, F. D., Bagozzi, R. P. and Warshaw, P. R. (1989) User acceptance of computer technology: a comparison of two theoretical models, *Management Science*, 35, 8, 982-1002.
- DiMaggio, P. J. and Powell, W. W. (1983) The iron cage revisited: institutional isomorphism and collective rationality in organizational fields, *American Sociological Review*, 48, 147-160.
- and --- (1991) Introduction. In: Powell, W. W. and DiMaggio, P. J. (eds.) *The New Institutionalism in Organizational Analysis*, University of Chicago Press, Chicago.
- Drent, M. and Meelissen, M. (2008) Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers and Education*, 51, 1, 187-199, doi.org/10.1016/j.compedu.2007.05.001
- Federal Republic of Nigeria (2004) *National policy on education* (4th ed.), Nigeria Educational Research Development Council Press, Lagos.
- Ferdousi, B. and Levy, Y. (2010) Development and validation of a model to investigate the impact of individual factors on instructors' intention to use e-learning systems, *Interdisciplinary Journal of E-Learning and Learning Objects*, 6, 1-21.
- Fishbein, M. and Ajzen, I. (1975) *Belief, attitude, intention, and behavior: An introduction to theory and research*, Addison-Wesley Reading, MA.
- Flanagin, A. J. (2000) Social pressure on organizational website adoption, *Human Communication Research*, 26, 4, 618-646.
- Folorunso, O., Ogunseye, O. S. and Sharma, S. K. (2006) An exploratory study of

- the critical factors affecting the acceptability of e-learning in Nigerian universities, *Information Management and Computer Security Journals*, 14, 5, 496-505.
- Gilly, M. C. and Ziehl, V. A. (1985) The elderly consumer and adoption of technologies, *Journal of Consumer Research*, 12, 4, 353–357.
- Goldman, A. and Johansson, J. K. (1978) Determinants of search for lower prices: An empirical assessment of the economics of information theory, *Journal of Consumer Research*, 5(December), 176 - 186.
- Gullkvist, B. (2011) Drivers of diffusion of digital accounting practice, In A. Jokipii and J. Miettinen (Eds.) *Contributions to Accounting, Auditing and Internal Control: essays in honour of Professor Teija Laitinen*, 234, Acta Wasaensia, Finland, 25–43.
- Hagos, Y. and Negash, S. (2014) The adoption of e-learning systems in low income countries: The case of Ethiopia, *International Journal for Innovation Education and Research*, 2, 10, 79-84. Available at www.ijer.net
- Harcourt, M., Lam, H. and Harcourt, S. (2005) Discriminatory practices in hiring: Institutional and rational economic perspectives, *International Journal of Human Resource Management*, 16, 11, 2113-2132.
- Henderson, D., Sheetz, S.D. and Trinkle, B. S. (2011) Understanding the intention to adopt XBRL: An environmental perspective, *Journal of Emerging Technologies in Accounting*, 8, 1, 7–30.
- Hodgson, G. M. (2006) What are institutions? *Journal of Economic Issues*, XL, 1, 1–25.
- Hsia, J.-W., Chang, C.-C. and Tseng, A.-H. (2012) Effects of individuals' locus of control and computer self-efficacy on their e-learning acceptance in high-tech companies, *Behaviour and Information Technology*, 1-14.
- Hsiao, K. L. (2012) Exploring the factors that influence continuance intention to attend one-to-some online courses via videoconferencing software, *The Turkish Online Journal of Educational Technology* 11, 4, 155-163.
- Huang, H. M. and Liaw, S. S. (2005) Exploring users' attitudes and intentions toward the web as a survey tool, *Computers in Human Behavior*, 21, 5, 729-743.
- Huynh, Q. L. and Thi, T. L. L. (2014) Utilizing the quantile regression to explore the determinants on the application of e-learning, *Journal of Knowledge Management, Economics and Information Technology*, 4, 2, 1-14.
- Jaggars, S. S. (2011) Online learning: Does it help low-income and underprepared students? *CCRC Working Paper No. 26*.

- Jamieson-Proctor, R. M., Burnett, P. C., Finger, G. and Watson, G. (2006) ICT integration and teachers' confidence in using ICT for teaching and learning in Queensland state schools, *Australasian Journal of Educational Technology*, 22, 4, 511-530.
- Jan, P.-T., Lu, H.-P. and Chou, T.-C. (2012) The adoption of e-learning: an institutional theory Perspective, *Turkish Online Journal of Educational Technology*, 11, 3, 326-343.
- Kanwal, F. and Rehman, M. (2014) E-learning adoption model: A case study of Pakistan, *Life Science Journal* 11, 4s, 78-86, retrieved March 6, 2014 from <http://www.lifesciencesite.com>
- Kay, R. (2006) Addressing gender differences in computer ability, attitudes and use: the laptop effect, *Journal of Educational Computing Research*, 34, 2, 187-211.
- Keengwe, J., Onchwari, G. and Onchwari, J. (2009) Technology and student learning: toward a learner-centered teaching model, *Association for the Advancement of Computing in Education Journal*, 17, 1, 11-22.
- Krassa, M. (1988) Social groups, selective perception, and behavioral contagion in public opinion, *Social Networks*, 10, 1, 109-136.
- Kurt, S. (2012) How do teachers prioritize the adoption of technology in the classroom? *Teachers and teaching: theory and practice*, 18, 2, 217–231.
- Lamb, R. and Kling, R. (2003) Reconceptualizing users as social actors in information systems research, *MIS Quarterly*, 27, 2, 197-235.
- Lee, M. J. W. and McLoughlin, C. (2011) Web 2.0-based e-learning: applying social informatics for tertiary teaching. Information Science Reference, Hershey, New York.
- Lee, B. C., Yoon, J. O. and Lee, I. (2009) Learners' acceptance of e-learning in South Korea: theories and Results, *Computers and Education*, 53, 1320-1329.
- Lewis, W., Agarwal, R. and Sambamurthy, V. (2003) Sources of influence on beliefs about information technology use: an empirical study of knowledge workers, *MIS Quarterly*, 27, 4, 657–678.
- Liang, H, Saraf, N, Hu, Q. and Xue, Y. (2007) Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management, *MIS Quarterly*, 31, 1, 59–87.
- Lim, C. P. and Chai, C. S. (2008) Teachers' pedagogical beliefs and their planning and conduct of computer-mediated classroom lessons, *British Journal of Educational Technology*, 39, 5, 807–828.
- Markauskaite, L. (2006) Gender issues in pre-service teachers' training: ICT

- literacy and online learning, *Australasian Journal of Educational Technology*, 22, 1, 1-20.
- Mazman, S. G. (2011) Gender differences in using social networks, *The Turkish Online Journal of Educational Technology*, 10, 2, 133-139.
- Morris, M. G. and Venkatesh, V. (2000) Age differences in technology adoption decisions: implications for a changing work force, *Personnel Psychology*, 53, 2, 375-403, doi: 10.1111/j.1744-6570.2000.tb00206.x
- Norris, C., Sullivan, T., Poirot, J. and Soloway, E. (2003) No access, no use, no impact: Snapshot surveys of educational technology in K-12, *Journal of Research on Technology in Education*, 36, 1, 15-27.
- North, D. C. (1989) Institutional change and economic history, *Journal of Institutional and Theoretical Economy*, 145, 4, 238-245.
- (1990) *Institutions, institutional change and economic growth*. Cambridge University Press, Cambridge, UK.
- Okazaki, S. and dos Santos, L. M. R. (2012) Understanding e-learning adoption in Brazil: major determinants and gender effects, *The International Review of Research in Open and Distance Learning*, 13, 4, 91-106.
- Olatokun, W. M. and Mala, A. (2012) Assessing students' satisfaction with an e-learning system: the case of national open university of Nigeria, *IEEE African Journal of Computing and ICT – Special Issue on ICTs in the African Environment*, 5, 4, 2, 127-142.
- Oliver, C. (1997a) Sustainable competitive advantage: combining institutional and resource-based Views, *Strategic Management Journal*, 18, 9, 697–713.
- (1997b) The influence of institutional and task environment relationships on organizational performance: the Canadian construction industry, *The Journal of Management Studies*, 34, 1, 99–124.
- Ong, C. S. and Lai, J. Y. (2006) Gender differences in perceptions and relationships among dominants of e-learning acceptance, *Computers in Human Behavior*, 22, 5, 816–829.
- , --- and Wang, Y. S. (2004) Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies, *Information and Management*, 41, 95-804.
- Oye, N. D., Salleh, M. and Iahad, N. A. (2011) Challenges of e-learning in Nigerian: University education based on the experience of developed countries, *International Journal of Managing Information Technology (IJMIT)* 3, 2, 39-48.
- Park, S. Y. (2009) An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning, *Educational Technology and Society*, 12, 3, 150–162.

- Pommer, M. D., Berkowitz, E. N. and Walton, J. R. (1980) UPC scanning: an assessment of shopper response to technological changes, *Journal of Retailing*, 56, 2, 25–44.
- Qureshi, I. A., Ilyas, K. and Yasmin, R. (2012) Challenges of implementing e-learning in a Pakistani university, *Knowledge Management and E-Learning: An International Journal*, 4, 3, 310-324.
- Raaij, E. M. and Schepers, J. J. (2008) The acceptance and use of a virtual learning environment in China, *Computers and Education*, 838-852.
- Rossi, P. G. (2009) Learning environment with artificial intelligence elements. *Journal of E-Learning and Knowledge Society*, 5, 1, 67-75.
- Rubenstein, H. (2003) E-learning: Potentials and pitfalls. Dynamic Management Consulting. Growth Strategies Inc., retrieved January 31, 2016 from <http://www.leadershipforeducators.org/articles/elearning1.pdf>
- Salawudeen, O. S. (2010) *E-learning technology: The Nigerian experience*, Roger Printing and Publishing limited, Abuja.
- Shi, W., Shambare, N. and Wang, J. (2008) The adoption of internet banking: an institutional theory perspective, *Journal of Financial Services Marketing*, 12, 4, 272–86.
- Scott, W. R. (1995) *Institutions and organizations*, Sage, Thousand Oaks, CA.
- (2001) *Institutions and organizations* (2nd ed.), Sage, Thousand Oaks, CA.
- (2004) *Institutional theory*, Sage, Thousand Oaks, CA.
- Selwyn, N. and Gorard, S. (2008) What computers can't do for you?, *Adults Learning*, 19, 6, 26-27.
- Stigler, G. J. (1961) The economics of information, *Journal of Political Economy*, 60 (June), 213–225.
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y. and Yeh, D. (2008) What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction, *Computers and Education*, 50, 4, 1183-1202.
- Teo, H. H., Wei, K. K. and Benbasat, I. (2003) Predicting intention to adopt interorganizational linkages: an institutional perspective, *MIS Quarterly*, 27, 1, 19-49.
- Tomei, L. A. (2005) Taxonomy for the technology domain, in L. Tomei (Ed.), *Taxonomy for the Technology Domain* (pp. 89-108). Information Science Publishing, Hershey, PA. doi:10.4018/978-1-59140-524-5.ch005
- Ugrin, J. C. (2009) The effect of system characteristics, stage of adoption, and

- experience on institutional explanations for ERP systems choice, *Accounting Horizons*, 23, 4, 365–89.
- Venkatesh, V. (2000) Determinants of perceived ease of use: integrating control, intrinsic motivation and emotion into the technology acceptance model, *Information Systems Research*, 11, 4, 342-365.
- and Morris, M. G. (2000) Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior, *Management Information System (MIS) Quarterly*, 24, 1, 115- 139.
- Villadsen, A. R., Hansen, J. R. and Mols, N. P. (2010) When do public managers imitate each other? Mimetic decision making in contracting decisions of Danish municipalities, *Public Organization Review*, 10, 4, 357–376.
- Volman M. and van Eck, E. (2001) Gender equity and information technology in education: the second Decade, *Review of Educational Research*, 71, 4, 613-634.
- Wang, S. and Cheung, W. (2004) E-business adoption by travel agencies: prime candidates for mobile e-business, *International Journal of Electronic Commerce*, 8, 3, 43-63.
- Wozney, L., Venkatesh, V. and Abrami, P. C. (2006) Implementing computer technologies: teachers' perceptions and practices, *Journal of Technology and Teacher Education*, 14, 1, 173-207.
- Yuen, A. H. K. and Ma, W. W. K. (2008) Exploring teacher acceptance of e-learning technology, *Asia Pacific Journal of Teacher Education*, 36, 3, 229-243.
- Zorn, T. E., Flanagan, A. J. and Shoham, M. D. (2011) Institutional and non-institutional influences on information and communication technology adoption and use among nonprofit organizations, *Human Communication Research*, 37, 1, 1-33, doi:10.1111/j.1468-2958.2010.01387.x