European Journal of Training and Development

E-training adoption in the Nigerian civil service

Bello Zainab Muhammad Awais Bhatti Faizuniah Bt Pangil Mohamed Mohamed Battour

Received 19 November 2014
Revised 29 June 2015
Accepted 29 June 2015

E-training adoption in the Nigerian civil service

Bello Zainab, Muhammad Awais Bhatti and Faizuniah Bt Pangil
School of Business Management, College of Business, Universiti Utara Malaysia, Sintok, Malaysia

Mohamed Mohamed Battour
Faculty of Commerce, Tanta University, Tanta, Egypt

Abstract

Purpose – The purpose of this paper is to highlight the factors that aid e-training adoption in the Nigerian civil service.

Design/methodology/approach – This paper is based on a review of past literature from databases, reports, newspapers, magazines, etc. The literature recognised the role of perceived cost, computer self-efficacy, availability of resources and perceived support in e-training adoption. Using technology acceptance model (TAM), this paper explained the importance of these variables in e-training adoption in developing country context.

Findings – The authors found that the combined role of perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support is critical for e-training adoption in developing countries, particularly in Nigeria. Thus, the authors proposed the combination of these variables which would encourage future research on the use of TAM in technology adoption.

Research limitations/implications – This paper gives an elaboration of the role of computer self-efficacy, perceived cost, availability of resources and perceived support with TAM as base of the framework. This provides researchers the opportunity to test the proposed framework empirically and further suggest other variables that can aid e-training adoption in the context of developing country.

Practical implications – The result of this paper can serve as a guide to managers and policymakers to have a better understanding of the requirements for e-training adoption, especially in developing countries. This will go a long way towards designing good policies that could maximise e-training results.

Originality/value – This paper adds to the existing literature on e-training and TAM with the suggestion of proposed variables.

Keywords TAM, E-training, Civil service, Nigeria

Paper type Conceptual paper

1. Introduction

Globally, intellectual workforce is seen as the key for organisations to achieve their goals and objectives. This has made many organisations to invest their resources extensively in ensuring that these work forces are properly trained. Training has evolved over the years with the advent of technology. To have workforce that are abreast with the technological age, there is a need to train technologically as well. With the speedy development of information and communications technology, electronic training has gained popularity in the organisational settings. Owing to the growing

European Journal of Training and Development
Vol. 39 No. 6, 2015
pp. 538-564

2046-9012
DOI 10.1108/EJTD-11-2014-0077

interest in the electronic training adoption practices in recent times, in both developed and developing countries, e-training has transformed into revolutionary way of learning in most organisations (Ramayah *et al.*, 2012). This can be credited to its access flexibility, cost effectiveness and timely content. E-training has played significant roles as a means of skill training and knowledge acquisition by the employees in organisations of developed countries (Lorenzetti, 2005). Developing countries are also trying to follow the e-training trend. However, in spite of these benefits, the adoption of e-training has constituted a challenge in developing countries like Nigeria due to factors such as the nature of people, resources, environment and the ease of use of technology (Heeks, 2003). For instance, it has been stated that some employees usually go to training for the sake of the monetary benefits and not for the actual learning (Dada, 2006).

Several studies have been conducted on technology adoption in developed countries. However, their findings may not be applicable to developing countries like Nigeria because national culture is likely to have a great influence on the use of technology (Rouibah, 2008). Most studies of electronic training conducted in Nigeria are mostly on institutions of higher learning (Eke, 2011; Okiki, 2011). These studies have explored different motivating factors for institution's adoption of electronic learning. In these previous studies, students or individual employees were mostly the main focus. It is known that employees do not have the authority for major changes in an organization, as decisions on major changes in any organisation are usually for top management. Therefore, the decisions about such changes are usually in the hands of the top management. Previous studies have not looked at electronic training from the perspective of management. Therefore, the present paper departs from the earlier studies in Nigeria by focussing on management level in the Nigerian civil service.

The Nigerian civil service originated from the organisations the British established before the country's independence. Since its inception, the Nigerian civil service has witnessed several reforms (Anazodo *et al.*, 2012). However, in spite of all these reforms, its large manpower strength and the huge budget allocated to the Nigerian civil service, it is still facing issues of poor infrastructure, redundant, ageing and untrained manpower (El-Rufia, 2011). All this has made the Nigerian civil service not to be as efficient as it should be (El-Rufia, 2011). These manpower requires constant training to carry out their functions, and for this reason, in recent time, the head of the service has been embarking on measures to promote efficiency in the civil service to be responsive to the needs of the public (News Agency of Nigeria, 2009). To be current with the rest of the world in issues, particularly training issues, the adoptions of electronic training will be appropriate in the Nigerian civil service. For these reasons, Nigerian Government have tried to encourage technology adoption and use by establishing programmes like the National Telecommunication Policy, Science and Technology Policy and National Information Technology Development Agency. However, Nigerian public sector is slow in adopting technology in spite of it being a large sector (Eze *et al.*, 2013). This raises some concern, as it has been argued that it is easy for large organisations to adopt technology (Ongori, 2009). It is important to note that e-training is not a new thing in Nigeria. However, research on the factors influencing the adoption of e-training service in the Nigerian civil service is still scarce. Therefore, this study considers it appropriate and important to examine these factors.

Understanding the adoption and use of e-training by employees in organisations has been linked to some influencing factors. For example, factors such as availability of

resources, perceived cost, computer self-efficacy and perceived support have been identified to have an influence on electronic training adoption in organisations (Rym *et al.*, 2013). These factors are also considered in the present paper due to inconsistencies in results. Furthermore, some of these influencing factors are extended to capture the scenario in the Nigerian environment. In particular, the dimension of availability of resources (technological infrastructure and Internet facilities) is extended to include power supply. It has been stated that for a successful adoption of e-training programme, organisation should ensure the availability of the necessary resources (Psycharis, 2005). Therefore, taking Nigerian environment into consideration where power supply is inadequate and because power supply has been observed to play a significant role among other factors in influencing the adoption of technology (Haliso, 2011), it is important to examine the role of power supply in e-training adoption in the Nigerian civil service.

Furthermore, the variable of perceived support is included in this paper but with the dimension of organisational support, technical support and government support. The present study departs from previous studies (which employed the construct individually) by examining the combination of the three dimensions collectively. This is important because the three dimensions are very relevant to the study in Nigeria where the culture, environment and mindset of the people are that in which any new development introduced is looked at with suspicion. Even when potential users believe that a given application is useful, they may at the same time believe that the system is too hard to use. The performance benefits of usage are outweighed by the effort of using the application, in which case, usage is theorised to be influenced by perceived ease of use (PEOU) (Agarwal and Prasad, 1999). However, in the Nigerian setting, support of any form (organisational support, technical support or government support) is likely to motivate the adoption and acceptance of e-training in the Nigerian civil service.

The choice of studying e-training adoption in Nigerian civil service is not unconnected to the fact that public sector are not proactive to testing new technology, even though that could provide greater benefits (Akpodiete, 2012). The study of e-training in Nigerian civil service is very important, as it will serve as another good example in the field of e-training study. To the best of our knowledge, no known study has examined the factors influencing the adoption of e-training for employees in the Nigerian civil service. Moreover, in the area of online training that is designed to help employees carry out their task efficiently, not much research work exist (Hardman and Robertson, 2012). Therefore, the present research filled this gap by explaining the role perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support play in influencing the adoption of e-training in the Nigerian civil service, using the technology acceptance model (TAM) as a base.

In line with the aforementioned discussions, the objective of this paper is to examine the relationship between perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisation support, technical support, government support and e-training adoption. Furthermore, to see the mediating effect of TAM constructs of perceived usefulness (PU) and PEOU, this paper explains the relationship between the above-stated variables and e-training adoption. Therefore, the research questions for this paper are as follows:

RQ1. What is the relationship between perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisation support, technical support, government support and e-training adoption?

RQ2. Does PEOU mediate the relationship between, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisation support, technical support, government support and e-training adoption?

RQ3. Does PU mediate the relationship between PEOU and e-training adoption?

2. Technology acceptance model

TAM, which was developed by Davis (1989), is a model that derived is origin from the theory of reason action. TAM's purpose is to investigate what would make an individual accept or reject the use of technology. PEOU and PU are the two main variables in TAM. They are used to predict an individual's intention in the use of technology.

Over the years, TAM has been used to conduct several studies in the quest to predict the acceptance of technology (Abbad *et al.*, 2009). This has made TAM to be accepted as the most compelling model to examine the acceptance of technology (Fonchamnyo, 2013). TAM is argued to be preferred in situations that are considered compulsory (Gazinoory and Afshari-Mofrad, 2011). TAM's parsimonious nature has made it to be accepted and used in several studies conducted on technology acceptance. Furthermore, the model has been proven to be successful in predicting individual's behaviour, especially in technology acceptance (Purnomo and Lee, 2013).

Findings of many studies have concurred with TAM's argument on technology adoption. Studies have argued that TAM can be broaden in various ways in its applicability (Liu *et al.*, 2009; Park, 2009; Venkatesh and Davis, 2000). This has resulted in the TAM instruments being extensively used in research to study issues that has to do with user acceptance of technology (Jebakumar and Govindaraju, 2009).

Since the development and validation of the original TAM by Davis (1989), many studies have replicated it. This has made studies to suggest that TAM can be applicable in various ways (Igbaria *et al.*, 1997; Venkatesh and Davis, 2000; Ong *et al.*, 2004). Some studies have opined that TAM can be extended in the quest to further investigate user's behaviour. This has led to TAM being extended by some studies (Chau and Hu, 2001; Lee, 2006). These studies using the concept of TAM have confirmed that the perception of the user on ease of use and usefulness of technology are necessary determinants in the adoption of technology (Hashim, 2008; Purnomo and Lee, 2013). Therefore, to improve on TAM's predictive power, the addition of external variables has been suggested (Fonchamnyo, 2013).

Purnomo and Lee (2013) reported that many studies have extended TAM to examine the intervening effect of external variables on constructs of PU and PEOU of technology. Furthermore, it has been suggested that TAM can be extended to include variables such as organisational support and computer background (Chau and Hu, 2001). These variables (organisational support and computer background) were argued to have an immense effect on user's intention to use technology. Gazinoory and Afshari-Mofrad (2011) used extended TAM to examine content, expert, technical support, computer self-efficacy, reliability and cultural variables in Iran.

Fonchamnyo (2013) extended TAM to include the variables of perceived cost. Other studies (Purnomo and Lee, 2013; Gazinoory and Afshari-Mofrad, 2011; Lee, 2006) have

extended TAM to include computer self-efficacy. Similarly, Yiong *et al.* (2008) extended TAM to include the variable of infrastructure as technology and system. Jebakumar and Govindaraju (2009) carried out a research using TAM. Availability of Internet facilities was among the variables of their study. Furthermore, Lee *et al.* (2013) extended TAM to include the variable of organisation support. Abbad *et al.* (2009) included technical support as part of their extension of TAM. In another development, government support was included as an extension of TAM by Chong *et al.* (2010). These studies showed how an individual's decision process is affected by external variables. These studies have been carried out mostly in developed countries.

On the other hand, Brown (2002) modified TAM for developing countries. Brown's model was tested in South Africa with external variables such as ease of findings, ease of understanding, self-efficacy and computer anxiety. The role of these variables to web-based technology acceptance was examined through PEOU. Brown (2002) argued that for a developing country, usage may not be influenced by PU. This increases the influencing effect of PEOU on PU as well as on usage (Anandarajan *et al.*, 2002).

Sabrina (2007) argued that there is a need to test TAM in different cultural setting. She opined that individual's behaviour may be different between developed and developing countries. Jebakumar and Govindaraju (2009) argued that all the variables of TAM are not correlated, which indicates that TAM varies from culture to culture. Therefore, the testing of behavioural models in different cultural setting is important (Sabrina, 2007). The significance of testing theories was stressed by Hubbard *et al.* (1998). The authors suggested that researchers should not relent on the testing of theories with the hinge sight of understanding factors that can be the success or failure of such theory.

Furthermore, Hunter (2001) agreed with this assertion when he argued that replication of model is also necessary by stating that external validation of theory can be achieved when models are replicated in different countries and populations. Replication was also buttressed with the argument that through replications theories can be tested and interpreted (Kerlinger and Lee, 2000). This can be in situations that are either similar or otherwise. Hubbard *et al.* (1998) had strengthen this point earlier when they argued that in the process of research, the application of the rule of replication is very important. Hubbard *et al.* (1998) crown this all when they hailed the principles of replication as the hallmark of science. Anandarajan *et al.* (2002) pointed out that there is no universally accepted language, definitions or underpinned theories that can stand as a base for management theory which can be applied worldwide. Therefore, with reference to Figure 1, this paper is using PEOU and PU in TAM to explain the role of perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support in e-training adoption in the Nigerian civil service.

3. Methodology

This paper highlights the important factors that contribute and influence e-training adoption in Nigerian civil service. To highlight these variables, the researchers have gone through different databases (research papers, conceptual papers, abstracts, newspapers, magazines and books). In conducting the literature review, database like ScienceDirect, EBSCOhost and Emerald were used. Furthermore, different reports published in recent years and about 300 papers were reviewed to develop

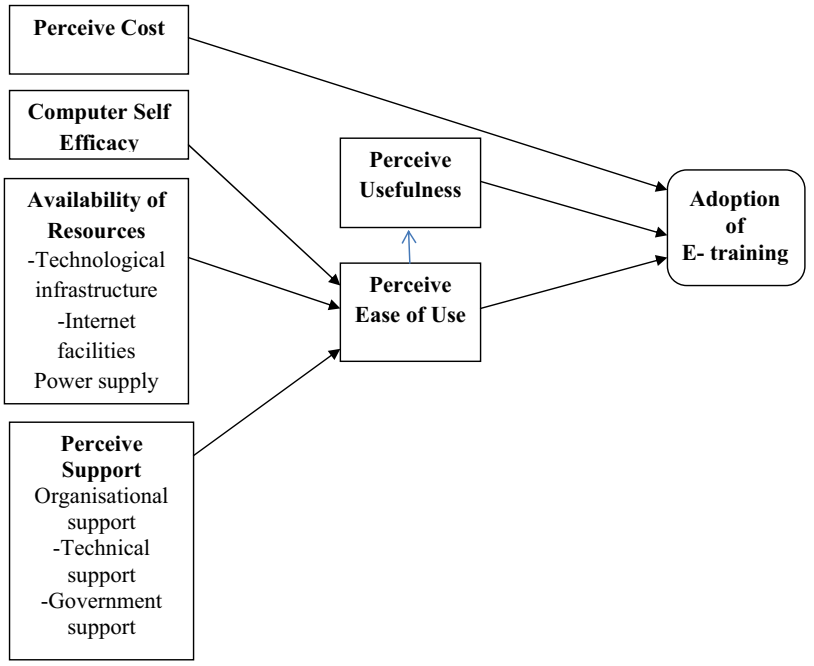

Figure 1.
Proposed framework for e-training adoption

this paper concept. However, all those studies that were not related to e-training adoption were excluded. This is because this present paper is focussed on e-training adoption in developing countries. This paper is developed based on a review of past literature and, therefore, a review of the literature on e-training in Nigeria.

4. E-training

Electronic learning/training is the term that is used when learning/training involves using technology to educate, be it face-to-face, distance-mediated learning or pure online (Kanuka, 2006). E-training has been defined as the process of delivering skills and knowledge with the use of technology that is being mediated by Internet from an instructor to employee (Mohsin and Sulaiman, 2013). It has also been referred to as the use of technology and other educational material to train (Colin, 2003). Furthermore, e-training has also been said to be training experience that is technologically mediated and carried out to economically improve performance in workplace to achieve personal or organisational goals (Loh *et al.*, 2013). This paper considers e-training an educational system that is web-based and enables trainees' use of network of computers and information technology in training (Hsbollah and Idris, 2009). Since Programmed Logic for Automatic Teaching Operations (PLATO) was developed in the 1960s, more interactions can be done online today (McKay and Vilela, 2011). E-learning and e-training has grown since PLATO. Globally, online learning environment has become a part of organisations (Athey, 2012). The traditional way of learning is nearly phased out with the advancement in information and communications technologies which have made learning and

training more flexible (Salawudeen, 2010). Owing to the proven ineffectiveness of conventional training (Bonk and Wisher, 2002), organisations now prefer using e-training (Loh *et al.*, 2013). Although e-training has not reached some countries, there is large increase in organisations and individuals using the system (McKay and Vilela, 2011).

In the African continent, some countries have started using technology to educate and train. This advancement is evident in the report of the Commonwealth of Learning, which showed the types of information and communications technologies being used in Africa (Nneka, 2010). However, Africa is still in the infancy stage of e-learning and training. This is shown in the e-learning African database survey conducted by Unwin (2008). Nevertheless, there is a strong interest in electronic learning and training in Africans (Nneka, 2010).

There are issues faced in the adoption of e-training in Africa (Minnaar, 2011). It was identified that cost, lack of infrastructure and lack of proper training are among the constraints of electronic learning in Africa (Nneka, 2010). To successfully implement e-training system in Africa, there is a need for proper awareness, proper computer literacy and e-training content, adequate connectivity and bandwidth (Phiri *et al.*, 2014). E-learning may not be the solution to all education-related problems in Africa, but giving the programme consideration is been done by policymakers, as there is a strong willingness on part of stakeholders to try electronic learning and training in the African continent (LaRocque and Latham, 2003; Oyerinde, 2014).

Many African countries including Nigeria are aware of the impact e-learning and e-training has globally. However, Nigeria is behind in the adoption and usage of technologies as seen by the low level in the diffusion of e-learning and e-training (Salawudeen, 2010). Nigeria, having the largest economy in Africa, has the financial resources and people with the capability to design and deliver e-training programmes successfully, but the country is still having inadequate financial policies, low level in technological development and engineering (Salawudeen, 2010). Nigeria has not fully complied with the recommendations of United Nations Education, Scientific and Cultural Organisation of allocating to educational process 26 per cent of total budget annually (Nwabufo *et al.*, 2013). However, an attention has been given to e-learning and e-training recently, even though is it not a new trend. This is evident in the formation of National Policy for Information Technology in Nigeria that has produced policies on e-learning which are still in the launching stage (www.nitda.gov.ng/downloads/NATIONALIT POLICY). Furthermore, employment into some organisations and admission processes into educational institutions are now mostly done using technology (Nwabufo *et al.*, 2013). Additionally, the considerable growth in telecommunication industry in Nigeria has given people the opportunity of using the mobile phone for e-learning and e-training programmes (Nwabufo *et al.*, 2013).

Studies have investigated technology acceptance widely so as to have clear knowledge of factors that would support new technology usage and adoption (Loh *et al.*, 2013). Furthermore, to have successful adoption and effective implementation of e-training programme, it is important to know the factors that could encourage the adoption. Therefore, this paper explains factors that could influence e-training adoption in the Nigerian civil service.

4.1 PEOU and PU

PEOU here is used to discover the ease learners can use technology to train. The premise in TAM is that both PEOU and PU have a strong impact on the behaviour of individuals with regards to the use of technology. PEOU is said to be the level of confidence a user has that using a certain system would be easy. Therefore, users would accept a system that is easy to use. On the other hand, PU is the level of belief an individual has that his performance would be enhanced with the use of a certain system (Davis, 1989). If reward is linked with improved performance with the use of a system, then individuals will perceive that system to be useful. (Davis, 1989). E-training would be perceived by employees to be useful if it is easy to use and could lead to reward. In technology adoption and usage, the relationship between PEOU and PU has been explained by several studies (Venkatesh and Bala, 2008; Lee *et al.*, 2013). PEOU has been reported in several studies to have an effect in the usage of technology (Cheng, 2011). On the other hand, it has been argued that PU might not affect the usage of technology (Brown *et al.*, 2006). However, studies have also reported the influential role of PEOU in technology usage but on the condition that the technology is found to be useful and attractive by the user (Purnomo and Lee, 2013).

Studies have reported the direct and indirect effect of PU in technology acceptance (Abbad *et al.*, 2009; Park, 2009). The mediating effect of the construct in the relationship between PEOU and technology usage has also been argued (Liu *et al.*, 2009). However, it has been shown that PEOU might not have a strong influence in technology acceptance (Chong *et al.*, 2010). Furthermore, the relationship between PU and PEOU has been reported not to have an effect on technology acceptance (Rose and Fogarty, 2006). This shows the dependency of PEOU and PU on the independent variables under examination as well as the study being carried out. Therefore, this paper proposes that:

P1. PU mediates the relationship between PEOU and e-training adoption.

4.2 Perceived cost

Cost is a very crucial issue when considering technology adoption. Perceived cost could be referred to as expenses that an organisation incurs in the process of technology adoption (Lubega and Mugarura, 2008). It has been argued that cost influences the quality of electronic training programmes that an organisation provides (Folorunso *et al.*, 2006). In broader terms, cost includes the quality of infrastructure, types and quality of e-training services that is provided to employees. Perceived costs are the resources required for e-training adoption, which include cost of hardware resources, the cost of ensuring continuity of the programme, cost of stable power supply (considering the poor state of electricity supply in Nigeria), cost of employing and retaining experts in information technology and cost of software (Folorunso *et al.*, 2006).

Studies have argued that perceived cost is usually considered to be a barrier to technology usage and acquisition (Machogu and Okiko, 2012). The Nigerian civil service receives its budget allocation from the government, and the complaint is that it is not adequate. Therefore, this budgetary allocation has to be considered against all the facilitating conditions that are required for a smooth adoption of e-training.

The cost of technology usage could be direct or indirect. The explanation is that direct cost is as significant as the indirect cost. Cost can arise from the new way of operation which includes organisational cost spent in planning, organising and putting of the new system into practice (Machogu and Okiko, 2012). Furthermore, Machogu and

Okiko (2012) stated that perceived cost involves the cost of technology acquisition as well as savings that will be derived from technology usage by both organisations and employees. The attractions of returns on investments will make organisations to invest in new technology adoption (Hall and Khan, 2002). Therefore, if e-training is perceived to be beneficial, it is very likely that organisations will adopt it. Apart from quantifiable cost of technology adoption, there are also ranges of relative cost. For instance, employees have to forfeit their daily and travelling allowance for the benefit of being with their family. These relative costs are likely to influence employees in the adoption of technology (Wu and Wang, 2005).

Furthermore, the competitiveness of technological products has gradually resulted in the cost of technologies declining over time, making technology adoptions to be easier (Middleton, 2011). This is, however, not the case for developing countries like Nigeria (Adika, 2003). The cost of both hardware and software is getting more expensive with inflation, making the acquisition of technological product a major project (Aduwa-Ogiegbaen, and Iyamu, 2005).

The adoption of e-training in the Nigerian civil service is a capital-intensive project that requires a lot of consideration. There are costs that will be recurring, while others will be competing for capital due to insufficient fund that ministries have to use for their daily operations. According to Folorunso *et al.* (2006), the major factors working against electronic learning in the Nigerian setting have to do with cost. Therefore, this paper proposes that:

P2. Perceived cost has relationship with e-training adoption.

4.3 Computer self-efficacy

Self-efficacy is an individual belief on their ability in using technology to perform certain work as well as being able to deal with any issue that may arise in the course of technology usage. Self-efficacy is defined as the perceived belief of being able to carry out action that is required to handle a particular situation (Bandura, 1982). Self-efficacy theory developed by Bandura determines the factor of behaviour with the view that behaviour is linked to self-efficacy and outcome belief. In the setting of learning and teaching, the concept of self-efficacy has been observed to be an important element (Compeau and Higgins, 1995), and when used, it leads to improved learning outcome (Hasan and Ali, 2004; Yi and Im, 2004).

Therefore, computer self-efficacy is about the confidence an individual has and the comfort they feel in relation to using technology. This goes a long way in the perception of the usefulness and ease of use of new technology (Thompson, 2010). Computer self-efficacy can then be defined as the level in which an individual believes they are able to carry out a certain job by using the computer (Compeau and Higgins, 1995). Cheng (2011) defined the term as an individual assessment of their ability to complete a certain task by applying their computer knowledge.

Mathieson (1991); Venkatesh and Davis (2000) studied the causal relationship between computer self-efficacy and PEOU. They suggested that computer self-efficacy has a relationship with PEOU. Their argument is that users have a positive belief in the ease of use of technology when their level of computer self-efficacy is high. Furthermore, some studies (Agarwal *et al.*, 2000; Chau and Hu, 2001; Tan, 2008) have also shown computer self-efficacy's effect on e-learning adoption.

Lee (2006) in his study of the factors that influence the adoption of e-learning system has computer self-efficacy as one of the study's construct. He showed that mandatory usage of electronic learning system is necessary in technology adoption. Furthermore, he also observed that computer self-efficacy has a significant influence on PEOU.

However, in a recent study conducted by Purnomo and Lee (2013), computer self-efficacy was observed not to affect either PEOU or PU. It was observed that this was due to the diversity of sample selected and study settings. Some of the respondents for the study were observed to be good in computer and Internet usage. In the Nigerian civil service, computer literacy is an issue. Akpodiete (2012), in his write up of the level of information and communications technology literacy in both schools and the civil service in Nigeria, argued that civil servants including those in high administrative posts are still novice in information technology usage. This gave rise to one of the objectives of the National Policy for Information Technology, that acquisition of information and communications skills are compulsory for civil servants. As it has been shown that there are contradicting effects of computer self-efficacy on PEOU, this paper proposes that:

P3. Computer self-efficacy has a relationship with PEOU in e-training adoption.

4.4 Technological infrastructure

Information technological infrastructure could be referred to as the technological backbone of communications, data, computers and basic systems (Earl, 1989). He viewed infrastructure as framework which guides organisations in satisfying their needs. McKay and Brockway (1989) gave their definition of technological infrastructure as the enabling foundation in which organisation depend on in the sharing of information technology. Technological infrastructure has also been looked at as part of technological architecture (Nchunge *et al.*, 2013). Furthermore, Duncan (1995) defined information communication technological infrastructure as that part of technological resources that makes it possible for innovations as well as continuous improvement in technological systems. Bhattacherjee and Hikmet (2008) referred to it as the shared technological system which is required for the implementation of information and technology in organisations. This paper considers technological infrastructure as the physical technological resources that will aid e-training process to take place.

The operations of organisations have been greatly influenced by the developments in technological infrastructure. This can be seen in the strengthening of the world economy which has been transformed into information- and knowledge-based economies (Nchunge *et al.*, 2013). This has made many organisations particularly in the developed countries to use technology to stay in operation. It has been shown that technological infrastructure is an important organisational capability that should be considered an effective source of value (Bharadwaj, 2000).

To have successful e-training in an organisation, there is a need for appropriate technological medium and channels to allow for sharing of information and communications (Selim, 2005; Folorunso *et al.*, 2006). It is necessary to ensure that the infrastructures are reliable, up to date and of good quality. Reliable technological infrastructure will encourage employees to learn and willing to accept e-training (Yiong *et al.*, 2008).

In the Nigerian civil service, infrastructure is one of the major challenges facing the sector. The country like many developing countries is still suffering from digital divide.

It is also believed that infrastructure and information and communications technolog literacy are combinations that are necessary in the usage of technology and communications tools to create, manage, evaluate and integrate information to have an enabling e-training environment. This is why speakers at Nigeria Computer Society 2013 conference advocated a robust infrastructure deployment for the country. The forum noted that infrastructure is needed to create, manage and implement appropriately the services that involve technology to work out successfully.

Technological infrastructure has been observed to have relations with technology adoption, acceptance and usage (Bhattacherjee and Hikmet, 2008; Folorunso *et al.*, 2006; Maughan, 2005; Ozgen, 2012; Yiong *et al.*, 2008). However, Thompson (2010) reported a contradicting result in his study of factors that determines technology usage. The results suggested that there was no statistical proof that infrastructure support might have influence on technology usage. Therefore, this paper proposes that:

P4. Technological infrastructure has a relationship with PEOU in e-training adoption.

4.5 Internet facilities

Researchers (Keeney, 1999; LaRose *et al.*, 1998) have argued that instruction done over the Internet is significant in learning as well as in training. Forsyth (2001) defined Internet in its simplest form as "an electronic mail system and library access facility". Martin (2003) gave his definition of Internet as a set of systems that enables two or more computers to send and receive information from one another. For this study, Internet facility refers to the availability of open standard network connectivity to aid the adoption of e-training. Availability of Internet facilities as a factor in e-training adoption is a necessity. The availability of Internet facilities will provide greater convenience, thereby enhancing the acceptance of e-training adoption. Passmore (2000) included Internet as one of the resources that aid web-based course delivery. Martins and Kellermanns (2004) argued that in technology acceptance, Internet facility is a critical factor. In electronic training, effective communication between trainers and trainees is done mostly via the Internet. Furthermore, it has been argued that less stress and dissatisfaction on access and connectivity could enhance the acceptance of electronic training as well as its success (Hara and Kling, 2000). The availability of Internet facilities helps in facilitating smooth information exchange (Webster and Hackly, 1997). It has also been argued that Internet facilities allow learners to receive innovations from trainers in learning that will help in stimulating and enhancing learning (Brown, 2002). Manipulations, creativity and initiatives from both learners and trainers are very much supported with the presence of Internet facilities. Furthermore, Saade and Bahli (2005) argued that for electronic learning to be beneficial, Internet facilities should be available and the learning environment should not be perceived to be complex. This perceived complexity may be distracting and discouraging to learners in accepting electronic training.

In recent times, almost every learning activity can be conducted via the Internet. Adika (2003) explained that when people have access to Internet, it will make them use technology more. Ehikhamenor (2003) reported that, although 50.4 per cent of Nigerian scientists in their study had access to Internet, it was, however, through commercial means. He concluded that availability of infrastructure, cost of services and issue with ease of use are the constraints faced by users of electronic learning. Similarly, the results

of other studies agreed with this argument (Luambano and Nawe, 2004). In addition, Oduwole (2004) pointed out that the quality of the Internet service was another constraint.

Furthermore, Ahiakwo (1998) in his write up of the role of Internet connectivity in Nigeria explained that Internet helps in accelerating information exchange between nations, organisations and individuals. He further suggested that the availability of Internet services could help in facilitating the search for solution to many national problems such as health, education and environmental problems. He said this would go a long way towards helping to address the challenges that are developmental in nature to developing countries. Studies have shown the usefulness and ease that the availability of Internet facilities has on electronic learning (Jebakumar and Govindaraju, 2009; Martins and Kellermanns, 2004). Therefore, this paper proposes that:

P5. Internet facilities have a relationship with PEOU in e-training.

4.6 Power supply

Notwithstanding the significance of power supply to technology, there appears to be scare literature on the effect of power supply on technology adoption. Power is said to be *the generation of electrical energy from power plant system which connects electric networks from the plant to consumer's appliances* (Hamburg and Valdma, 2011). It is an obvious reality that having access to power supply in any economy is a benefit worth having. Nowadays, power supply is required in all part of human living, for survival and development. The way of life and the level of a country's industrialisation can be measured by her power supply and its utilisation (Muhammed, 2005). Power supply is so essential for economic advancement of countries, such that an economy can halt without it. Consequently, power supply that is generally accessible, moderate and dependable is required in any economy for significant development.

In developed nations, power supply is made available when payment is made. In any case, in most African nations like Nigeria, power supply that is supplied by the government is hardly available, regardless of the fact that an individual has paid and could pay for it; there is still no assurance of its supply. Yet, economic and domestic activities still need to go on. To stay significant, it is a typical sight to see government, business premise and domestic houses on "generators". This has made the Nigerian people to give the nation the nick name of "generator economy" (Ekpo, 2009). This circumstance was authoritatively affirmed when the after effect of current survey on power supply issue demonstrated that 81 per cent of the Nigerian populace use different source to get power supply (Vanguard News, 2014). This circumstance has added to the typical cost for basic items, as the cost of power supply is added in the production of almost everything. The issue of power supply is bad to the point that Nigeria was among the African nations (Kenya, Ethiopia, Liberia, Tanzania and Ghana) included in the President Obama's "Power Africa" initiative that was reported in Cape Town in June 2013 (Clayton, 2014).

In Nigeria, the demand for power builds consistently, and this has surpassed the supply which is specified earlier as epileptic in nature (Sambo, 2008). Currently, Nigeria generates 3,800 MW of power, while the supply per capita is 136 kW for every hour (Joseph, 2014). This puts Nigeria among the nations with the least per capita power utilisation (Punch News, 2013). Specialists have assessed that Nigeria needs at least 40,000 MW power quarterly for the economy to be appropriately driven (Daily

Independent, 2014, May 27). In the event that this low power rate continues, a yearly loss of $130 billion has been estimated. Indeed, even with the power sector privatisation and several power plants set up to tab Nigeria's natural resources; therefore, it is evident that insufficient power supply is still a noteworthy issue frustrating the nation's advancement (Alawiye, 2011).

One of the assets that Nigeria has in plenitude is her human resources because of her large populace. A large number of this populace makes up the Nigerian civil service. To have a dependable and effective human capital, it is important to have a workforce that is trained. Nowadays, technology has a large role in this training. As explained earlier, technology needs reliable power supply for it to be a contributory element to advancement nationally as well as globally. This demonstrates the impact power supply has on growth (Alawiye, 2011). Be that as it may, the ease of utilising technology to train individuals in Nigeria is being confronted with the problem of inadequate supply of power. Even with the privatisation of the power sector, inadequate power supply in Nigeria has been a big issue for all sections of the economy.

Unlike developed countries that do not have the issue of inadequate power supply in technology adoption, studies and reports have indicated that insufficient supply of power is regarded as one of the hindrances in using technology to train in developing nations (Clayton, 2014). Power supply was rank 57 per cent as factor that hinders technology adoption (Adomi and Kpangban, 2010). Several studies agreed to this (Azubuike and Offordile, 2011; Eze *et al.*, 2013; Folorunso *et al.*, 2006; Oyadonghan and Eke, 2011). This goes to show that when power supply is stable and accessible, technology would be easy to adopt and vice versa. Therefore, based on the current power crises situations in Nigeria, this paper proposes that:

P6. Power supply has a relationship with PEOU in e-training adoption.

4.7 Organisational support

Organisational support refers to endorsement, encouragement of employees and positive attitude of the organisation in the provision of training information, system development and operations (Anandarajan *et al.*, 2002). Organisational support theory (OST), advanced by Eisenberger *et al.* (1986), has the premise that organisations give their employees assurance and emotional support by considering the concept and reward principle of social exchange. According to this theory, employees work for and are dedicated to organisations based on that organisation's concern for them. On this premise, Likert (1967) argued that a mutual support relationship based on the need for self-fulfilment should be formed by members and leaders in an organisation. He further argued that followers will respond positively to leader's decision when they perceived that they are valued, cared for and supported and vice versa.

The implication of OST is that employee's expectations of the organisations' concern are improved. This will make employees oblige to help in the achievements of set objectives. OST also offers to enhance the emotional commitment of employees to the organisation as well as reducing turnover and strengthening the cohesion of the organisation (Wu, 2009). Therefore, effective use of technology could be affected by organisational support (Anandarajan *et al.*, 2002). In their studies, Anandarajan *et al.* (2002) suggested that a lack of organisational support is a critical barrier to technology usage. They argue that organisational support and technology usage are associated. It

has also been stressed that for electronic learning to be successfully implemented in organisations, there is certainly the need for organisational support (Selim, 2005). This support is to be inclusive of e-training platforms, good policies, incentives, making available information and technical assistance.

In many organisations, e-training has become one of the issues given high priority. This is to make training and development of employees easy without having to relocate them out of the work environments. Many organisations changed from the traditional training method to e-training for the economic factor, as the latter is considered cheaper (Strother, 2002).

Even though many organisations are adopting the use of information and communications technology to train employees, some organisations have still not supported the e-training platform. This is evident in the non-expansion of significant resources to support electronic training (Sawang *et al.*, 2013). This leads to problems for users that are new to the system of electronic training (Sawang *et al.*, 2013). However, studies (Anakwe *et al.*, 2000) have greatly highlighted the issues of organisational support in technology adoption literature. With sufficient support, employees are bound to be comfortable with using information and communications technology to train. It has been argued that because electronic learning is often introduced at a very fast pace, employees require extensive support and guide on how the system is to be used. Sawang *et al.* (2013) further stressed this point that the lack of organisational support can affect employee's usage of electronic system negatively.

It is welcoming for employees when organisation shows supporting attitude, concern, acceptance and consideration for their needs (Anandarajan *et al.*, 2002). Organisational support helps to enhance favourable attitudes from employees. This would also help in changing employee's perception towards technology usage, usefulness as well as ease of use (Davis *et al.*, 1989). Employee's trust will be enhanced, enabling them to integrate technology usage into practice when there is organisational support (Lee *et al.*, 2013). Although Aggorowati *et al.* (2012) showed no relationship between organisational support and PEOU, Fishbein and Ajzen (1975) documented the possible relationship between system usage and organisational support. Likewise, Lee *et al.* (2013) also showed that there could be relationship between organisational support and PEOU. Furthermore, Anakwe *et al.* (2000) and Kim *et al.* (2006) suggested that organisational support could be associated with PU and PEOU. Therefore, organisational support could increase employee's trust of the organisation. This trust is likely to make employees believe that the organisation would provide all that is required for technology adoption. When this happens, employees are likely to believe that using technology to learn would be easy. This might encourage them to try new technology. Given these arguments, this paper proposes that:

P7. Organisational support has a relationship with PEOU in e-training adoption.

4.8 Technical support

Technical support has been defined as a computer company provision of services to assist customers that are experiencing difficulty in using that particular product. Technical support in this study refers to the availability of personnel that are experts in information technology to assist in e-training adoption. These include answering questions and solving problems that may emerge during usage. These

experts are expected to also provide instructions and support to users before and during the usage of information technology system. Furthermore, technical support is seen as a facilitating factor in the acceptance and adoption of technology (Rym *et al.*, 2013). Ngai *et al.* (2007) in their study of adoption of web course tools extended TAM with technical support as an external factor. Williams (2002) argued that one of the factors that can help in the acceptance of a new technology is technical support. This is because facilitating factors such as technical support give users the sense of safety in technology usage (Venkatesh, 1999). Furthermore, it has also been suggested that the availability of technical support is very necessary in the technology adoption (Ngai *et al.*, 2007). To them, technical support being a facilitating factor may be a determinant of PEOU. Furthermore, Abba and Dawha (2009) concurred that the lack of technical support could lead to unsuccessful technology adoption.

Studies have also observed that in system usage, PU and PEOU might be influenced by technical support (Gazinoory and Afshari-Mofrad, 2011; Ndubisi and Jantan, 2003). They argued that technical assistance is one of the factors that could help instil positive attitude towards technology acceptance in learning.

Furthermore, a lack of technical support has been suggested to be one of the barriers to electronic learning adoption (Muilenburg and Berge, 2005). The influence of technical support on technology acceptance has varied over the years. Tan and Teo (2000) reported that the variable did not have a strong influence on technology adoption of Internet banking in their study. This may be due to the condition that necessary support is available to users, and therefore, users take it for granted, making users indifferent to technical support as a determining factor to adoption.

Over the course of time, researchers have studied the variable of technical support as either a subconstruct of other variable (Bhattacherjee and Hikmet, 2008; Yiong *et al.*, 2008) or as a construct on its own (Abbad *et al.*, 2009; Gazinoory and Afshari-Mofrad, 2011). Although technical support in the study conducted by Bhattacherjee and Hikmet (2008) was a subconstruct of organisational support, it was explicitly shown to reflect the assistance and support needed for technology acceptance. In whatever form technical support is studied, it is important to note the crucial role that this factor plays in technology adoption.

Therefore, to prevent technology barrier, decision-makers should provide learners with necessary technical support (Kidd, 2010). This is to say that the level of technical support that is provided to employees by specialised staff is important in technology adoption. It is attributed to the fact that technology usage and satisfaction would be promoted when the level of technical support is high (Bhethecherjee and Hikmet, 2005; Thompson, 2010). The reverse effect is what would happen when there is low level of technical support. When this negative effect happens, it shows a lack of commitment from the organisation. Meanwhile, it has been documented that the availability of technical support has a positive effect on electronic learning (Alhomod and Shafi, 2013; Masie, 2001; Selim, 2005). When technical support is available, employees would not be sceptical about the organisation adopting e-training. It is a belief that would make usage easy for them. Therefore, this paper proposes that:

P8. Technical support has a relationship with PEOU in e-training adoption.

4.9 Government support

One of the strong influencing factors to be considered in technology adoption is the support of government (Jaruwachirathanakul and Fink, 2005; Tornatzky and Klein, 1982). Government support refers to the regulations, financial backing and encouragement that are received from government in relation to technology adoption and implementation. This support can be in the form of investment in infrastructure (Chong and Ooi, 2008; Chong *et al.*, 2010). In countries like Japan, Malaysia and Singapore, technology adoption rate is high due to government investment in technology (Chong *et al.*, 2010). This has given support to the argument that government support has an influence on technology adoption. When an economy is centrally driven and planned by the government, there is a need for them to play the crucial role of encouraging the citizenry in technology adoption (Chong *et al.*, 2010). This can be achieved by making good policies, providing necessary finance, investment in technology and providing needed infrastructure to ease smooth implementation (Hoang, 2003; Chong *et al.*, 2010).

When the necessary requirement is available, technology adoption is more feasible (Goh, 1995). The Organisation for Economic Co-operation and Development has argued that government support to technology adoption increases returns from investments in research and development, thereby enhancing industrial strength (Macharia, and Nyakwende, 2009). The civil service being the backbone of the public sector in Nigeria, with government investment in the appropriate infrastructure, it will go a long way towards contributing to the economic growth of the country.

In addition, when government is the driving force in technology adoption, employees may view compliance as mandatory, and therefore, they are very likely to adopt the trend (Tan and Teo, 2000). For instance, in countries like Malaysia where government has encouraged technology adoption with the promotion of services such as e-government websites which are accessible easily, users adopt by using these technology for their needs like renewing of road tax, etc. If the Nigerian Government makes policies that are supportive of e-training usage, it is likely that employees might comply. This gives strength to the argument that government support is an important factor in technology adoption, especially in developing countries (Chong *et al.*, 2010; Daniel and Jonathan, 2013). These studies have shown the significance of having government backing when considering technology adoption. Thus, government support has a strong influence on technology acceptance and usage (Chong *et al.*, 2010; Tan and Teo, 2000).

As stated earlier, Internet facilities, technological infrastructure and power supply are facilities that are necessary for smooth adoption and usage of e-training. These facilities require serious attention in Nigeria. However, with government support, these issues can be resolved to make e-training adoption easy. Furthermore, as discussed earlier, majority of the Nigerian civil servants are not computer literate and cost has been attributed to this. With government support, computers can be made easily available to civil servant. This could make technology usage easy and also motivates employees to learn the skill which could be helpful in e-training adoption. Therefore, this paper proposes that:

P9. Government support has a relationship with PEOU in e-training adoption.

5. Discussion and future research direction

After an extensive review of the literature, this paper framework was developed as shown in Figure 1. The framework is based on Davis's (1989) TAM, following Brown's (2002) modification of the model for developing countries. Brown's model was tested in South Africa with external variables such as ease of findings, ease of understanding, self-efficacy and computer anxiety. The role of these variables to web-based technology acceptance was examined through PEOU. Brown (2002) argued that for a developing country, usage might not be influenced by PU. This increases the influencing effect of PEOU on PU as well as on usage (Anandarajan *et al.*, 2002). The model that is proposed in this paper concentrates on the factors that could influence e-training adoption in the Nigerian context. This is because of the difference between Nigeria and South Africa on technology and individual characteristics (Omoigui, 2006). This paper highlights the role of perceived cost, computer self-efficacy, availability of resources and perceived support on e-training adoption. The suggested framework is for effective adoption of e-training in developing countries, particularly in the Nigerian civil service.

It has been argued that TAM varies from culture to culture (Jebakumar and Govindaraju, 2009). Culture has been observed to influence individual behaviour. Therefore, replication and applicability testing of behavioural models in different cultural setting and population is necessary for more empirical validation (Kerlinger and Lee, 2000). Therefore, TAM should be tested and replicated in different cultural settings (Sabrina, 2007).

Adoption of electronic training in public sector has been linked to influencing factors such as availability of resource, perceived cost, computer self-efficacy and perceived support (Abbad *et al.*, 2009; Rym *et al.*, 2013; Eke, 2011). These factors have been studied separately and also in different combination. Considering the Nigerian environment where corruption is a worrying issue (Dike, 2008; Transparency International corruption index, 2013), inadequate power supply is a very big problem (Sambo, 2008). The citizens survive on an income per capital of $3000 (Central Bank of Nigeria, 2012), and her civil service is filled with employees that are not computer literate (Akpodiete, 2012). Therefore, this paper proposes the combination of factors of perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support. This departs from the combined factors of previous studies. It also differs in the sense that these factors have not been tested in the Nigerian context.

The proposed model indicates a direct relationship between perceived cost and e-training adoption. The variable of perceived cost is included in this paper due to the fact that e-training adoption involves cost-related issues. For instance, computers are required for e-training to occur. Therefore, it is important to consider the cost implication of providing technological infrastructure as well as the personnel that will aid successful e-training adoption. The quality of electronic training programme has been argued to be influenced by cost (Folorunso *et al.*, 2006).

As discussed earlier that e-training involved the use of computer, this paper included the variable of computer self-efficacy. This is because there is a need:

- for employees to be computer literate before they can be involved in e-training process;
- to assess computer literacy level of employees in the Nigerian civil service as discussed earlier; and

- to re-examine the variable due to the inconsistency results found in the previous studies on the relationship between the variable and PEOU (Purnomo and Lee, 2013).

Furthermore, availability of resources is chosen as one of the independent variables in this paper, due to the fact that for e-training to be adopted in the Nigerian civil service, there is a need to have technological infrastructure, Internet facilities and power supply. As mentioned previously, these are the dimensions of availability of resources. It has been argued that organisation should ensure the availability of the necessary resources for successful adoption of technological programmes (Psycharis, 2005). The Nigerian civil service is ridden with obsolete technological infrastructure, Internet and power supply are inadequate. These are facilities that are of great necessity to e-training adoption. Therefore, there is a need to assess the effect these variables have on e-training adoption in the Nigerian civil service.

Perceive support is also included as a variable in this study due to the fact that adopting e-training is a major project and as such would require all the necessary support. The variable of organisational support, technical support and government support are included as dimensions of perceive support. The civil service is an institution owned by the government, so that their policies would be implemented to benefit the populace. As such, there is a need to get the government support for projects that involves the civil service. This is because government would be the one to provide the finance as well as make policies that would aid smooth e-training adoption. In countries where the role of government in encouraging technology and innovation adoption is very noticeable, the variable of government support is important. Tan and Teo (2000) used government support as a variable in their study, and they found it to be significant. However, their study was conducted in Singapore, and they used decomposed theory of planned behaviour because they were trying to get the full understanding of user's behaviour. This present paper uses TAM to predict technology adoption. Furthermore, as the civil service is made up of ministries, departments and agencies, there are needs to have these organisations' support in convincing policymakers of the need to adopt e-training and give their employees the necessary support. Everything involving technology requires the support of experts for smooth and continuous operation. Tan and Teo (2000) did not find technology support significant in their study because technology is available and in constant use by their respondents. As discussed earlier that the employees of Nigerian civil service have problem with computer usage because computer is not easily available to everyone, it is, therefore, necessary to include technical support as a variable in this study.

This paper suggests linking the e-training adoption to influencing factors of computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support. The link is made through the TAM construct of PEOU, whereas perceived cost is proposed as having a direct relationship to e-training adoption. We suggest that future researchers should test empirically the relationships of these factors to e-training through both constructs of PEOU and PU in different settings. This is to further confirm the premise of TAM. Researcher should also highlight other factors which can influence e-training adoption in developing country context and test this model to strengthen the e-training literature.

6. Implications

This paper highlights the factors that influence e-training adoption in the Nigerian public sector, particularly the civil service. It also serves to provide more understanding regarding e-training in the workplace, what needs to be done to improve the situation and further improve human resource development in the Nigerian civil service.

The adoption of e-training plays an important role in increasing awareness of the use technology in the workplace (especially in the Nigerian civil service), increasing learning culture, integrating e-training in work activities and understanding in depth the potentialities of communication and information tools. Moreover, this paper has an effect on organisations in developing countries that e-training is been considered as an alternative to the conventional training of the classroom. This paper shows that with e-training, organisational performance could be much better, making the civil service move forward to another way of engaging as well as delivering knowledge to building a skilful workforce.

Furthermore, with the adoption of e-training, facilities such as power supply, Internet and computers can be put in place that can improve the outlook of the civil service, removing it from the category of organisation that is ridden with obsolete infrastructure and conservatism. With e-training adoption, the cost that is usually associated with traditional training can be reduced and invested in other aspects of the organisation. E-training adoption benefits can motivate decision-makers to seek support of higher authority in the provision of finance and infrastructure to the organisation. This can help to improve the workforce, leading to more contribution in the country's growth, thereby making policymakers in the civil service to understand the use and need for e-training in the sector.

The theoretical implication of this study rests on examining the role the constructs of the study play in e-training adoption in the Nigerian civil service. This study proposes the combination of variables with TAM as a base for e-training adoption in the Nigerian civil service, which departs from past studies. This is done empirically to support TAM for developing countries. This study model was developed based on Brown's (2002) TAM for developing countries. It was also developed based on the peculiar nature of the Nigerian civil service of being conservative in their operations. The combination of the constructs of perceived cost, computer self-efficacy, technological infrastructure, Internet facilities, power supply, organisational support, technical support and government support has not been tested in the Nigerian context.

Furthermore, this paper adds to the body of knowledge on e-training adoption that already exists. This was done by generating the literature on the study variables. This study also helps in testing the ability of TAM in technology adoption in developing countries, particularly the Nigerian civil service. In addition, this study serves as a point of reference for future researchers in the area of e-training. This paper has contributed to TAM literature by using the combination of the aforementioned factors. Another significance of this paper is that it could assist managers and policymakers to get better knowledge about the e-training adoption, proposed factors influencing e-training adoption, PEOU and PU. This would go a long way towards helping them in designing policies that would maximise e-training results.

In view of the importance of technology in any economy, this paper recommends that policymakers should formulate policies that would gear the expenditure of federal government of Nigeria towards ensuring adequate support, provision of infrastructure and power supply. If this is done, it would be capable of promoting technology adoption in the country to the extent of enhancing the nation's economic well-being.

References

Abba, T. and Dawha, E.M.K. (2009), "Assessment of personnel training needs in the Ibrahim Babangida Library, Federal University of Technology, Yola, Nigeria", *Library Philosophy and Practice*, p. 293, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1290&context=libphilprac

Abbad, M., Morris, D. and De Nahlik, C. (2009), "Looking under the bonnet: factors affecting student adoption of e-learning systems in Jordan", *The International Review of Research in Open and Distance Learning*, Vol. 10 No. 2.

Adika, G. (2003), "Internet use among faculty members of universities in Ghana", *Library Review*, Vol. 52 No. 1, pp. 29-37.

Adomi, E.E. and Kpangban, E. (2010), "Application of ICT in Nigerian secondary schools", *Library Philosophy and Practice (e-journal)*, p. 345, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1353&context=libphilprac

Aduwa-Ogiegbaen, S.E. and Iyamu, E.O.S. (2005), "Using information and communication technology in secondary schools in Nigeria: problems and prospects", *Educational Technology and Society*, Vol. 8 No. 1, pp. 104-112.

Agarwal, R. and Prasad, J. (1999), "Are individual differences germane to the acceptance of new information technologies?", *Decision sciences*, Vol. 30 No. 2, pp. 361-391.

Agarwal, R., Sambamurthy, V. and Stair, R.M. (2000), "Research report: the evolving relationship between general and specific computer self-efficacy-an empirical assessment", *Information Systems Research*, Vol. 11 No. 4, pp. 418-430.

Aggorowati, M.A., Iriawan, N. and Gautama, H. (2012), "Restructuring and expanding technology acceptance model, structural equation model and Bayesian approach", *American Journal of Applied Sciences*, Vol. 9 No. 4.

Ahiakwo, C.O. (1998), "The role of Internet connectivity in Nigeria", *CWL Newsletter*, Vol. 3, available at: www.isocnig.org.ng/ConferencePapers/paper17.htm

Akpodiete, A.A. (2012), "ICT illiteracy in Nigerian Schools and Civil Service – how do we bridge the digital divide?", available at: www.thenigerianvoice.com/news/87725/1/ict-illiteracy-in-nigerian-schools-civil-service.html

Alawiye, A. (2011), "The power sector and industrial development in Nigeria: case company", Power Holding Company of Nigria, available at: www.theseus.fi/handle/10024/37421

Alhomod, S. and Shafi, M.M. (2013), "Success factors of e-Learning projects: a technical perspective", *Turkish Online Journal of Educational Technology*, Vol. 12 No. 2.

Anakwe, U.P., Igbaria, M. and Anandarajan, M. (2000), "Management practices across cultures: role of support in technology usage", *Journal of International Business Studies*, Vol. 31 No. 4, pp. 653-666.

Anandarajan, M., Igbaria, M. and Anakwe, U.P. (2002), "IT acceptance in a less-developed country: a motivational factor perspective", *International Journal of Information Management*, Vol. 22 No. 1, pp. 47-65.

Anazodo, R.O., Okoye, J.C. and Chukwuemeka, E.E. (2012), "Civil service reforms in Nigeria: the journey so far in service delivery", *American Journal of Social: Management: Science*, Vol. 3 No. 1, pp. 17-29.

Athey, J. (2012), "4 trends in online training and e-Learning", available at: www.trainingindustry.com/learning-technologies/articles/4-trends-in-online-training-elearning-in-2012.aspx (accessed June 2015).

Azubuike, O.C. and Offordile, S. (2011), "Strategies for improving the use of electronic teaching and learning (e-learning) for vocational education in tertiary institutions of Anambra State-Nigeria", *Mediterranean Journal of Social Sciences*, Vol. 2 No. 6, p. 123.

Bandura, A. (1982), "Self-efficacy mechanism in human agency", *American psychologist*, Vol. 37 No. 2, p. 122.

Bharadwaj, A.S. (2000), "A resource-based perspective on information technology capability and firm performance: an empirical investigation", *MIS Quarterly*, Vol. 24 No. 1, pp. 169-196.

Bhattacherjee, A. and Hikmet, N. (2008), "Re-conceptualizing organizational support and its effect on information technology usage: evidence from the health care sector", *The Journal of Computer Information Systems*, Vol. 48 No. 4, pp. 69-75.

Bonk, C.J. and Wisher, R.A. (2000), "Applying collaborative and e-learning tools to military distance learning: a research framework", *Technical Report: United States Army Research Institute for the Behavioural and Social Sciences*, available at: http://php.indiana.edu/cjbonk/Dist.Learn%20(Wisher).pdf

Brown, I.J.T. (2002), "Individual and technological factors affecting perceived ease of use of web-based learning technologies in a developing country", *Electronic Journal on Information Systems in Developing Countries*, Vol. 9 No. 2, pp. 1-15.

Brown, L., Murphy, E. and Wade, V. (2006), "Corporate e-learning: human resource development implications for large and small organizations", *Human Resource Development International*, Vol. 9 No. 3, pp. 415-427.

Central Bank of Nigeria Annual Report – (2012), available at: http://resourcedat.com/wp-content/uploads/2013/11/2012-Annual-Report.pdf (accessed 28 June 2015).

Chau, P.Y. and Hu, P.J.H. (2001), "Information technology acceptance by individual professionals: a model comparison approach", *Decision Sciences*, Vol. 32 No. 4, pp. 699-719.

Cheng, Y.M. (2011), "Antecedents and consequences of e-learning acceptance", *Information Systems Journal*, Vol. 21 No. 3, pp. 269-299.

Chong, A.Y. and Ooi, K.B. (2008), "Adoption of inter organizational system standards in supply chains: an empirical analysis of Rosetta Net standards", *Industrial Management and Data Systems*, Vol. 108 No. 4, pp. 529-547.

Chong, A.Y.L., Ooi, K.B., Lin, B. and Tan, B.I. (2010), "Online banking adoption: an empirical analysis", *International Journal of Bank Marketing*, Vol. 28 No. 4, pp. 267-287.

Clayton, R.W. (2014), "5 key barriers to educational technology adoption in the developing world", available at: http://edutechdebate.org/2014-ict4edu-trends

Colin, B. (2003), *E-Training and Development*, Capstone Publishing, UK.

Compeau, D.R. and Higgins, C.A. (1995), "Application of social cognitive theory to training for computer skills", *Information Systems Research*, Vol. 6 No. 2, pp. 118-143.

Dada, D. (2006), "The failure of e-government in developing countries: a literature review", *The Electronic Journal of Information Systems in Developing Countries*, Vol. 26 No. 1, pp. 1-10.

Daily Independent (2014), "The worsening electricity supply in Nigeria", 23 April, available at: http://dailyindependentnig.com/2014/04/worsening-electricity-supply-nigeria

Daniel, P.E.Z. and Jonathan, A. (2013), "Factors affecting the adoption of online banking in Ghana: implications for bank managers", *International Journal of Business and Social Research*, Vol. 3 No. 6, pp. 94-108.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS quarterly*, Vol. 13 No. 3, pp. 319-340.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.

Dike, V.E. (2008), "Corruption in Nigeria: a new paradigm for effective control", *Africa Economic Analysis*, available at: www.africaeconomicanalysis.org/articles/gen/corruptiondikehtm.html (accessed 14 September 2014).

Duncan, N.B. (1995), "The invisible weapon: a study of information technology infrastructure as a strategic resource", *Proquest Dissertation and Thesis*, TX A&M University, USA.

Earl, M.J. (1989), *Management Strategies for Information Technology*, Prentice-Hall, UK.

Ehikhamenor, F.A. (2003), "Internet facilities: use and non-use by Nigerian university scientists", *Journal of Information Science*, Vol. 29 No. 1, pp. 35-48.

Eisenberger, R., Huntington, R., Hutchison, S. and Sowa, D. (1986), "Perceived organizational support", *Journal of Applied Psychology*, Vol. 71 No. 3, pp. 500-507.

Eke, H.N. (2011), "Modeling LIS students' intention to adopt e-learning: a case from university of Nigeria, Nsukka", *Library Philosophy and Practice*, No. 1, p. 113, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1496&context=libphilprac

Ekpo, A.H. (2009), "The global economic crisis and the crises in the Nigerian economy", *Presidential Address to the 50th Conference of the Nigerian Economic Society, Abuja-Nigeria*.

El-Rufia, N. (2011), "Reforming Nigeria: reforming our dysfunctional public service", *White Paper*, available at: http://el-rufai.org/reforming-our-dysfunctional-public-service/ (accessed 13 August 2014).

Eze, S.C., Awa, H.O., Okoye, J.C., Emecheta, B.C. and Anazodo, R.O. (2013), "Determinant factors of information communication technology (ICT) adoption by government-owned universities in Nigeria: a qualitative approach", *Journal of Enterprise Information Management*, Vol. 26 No. 4, pp. 427-443.

Fishbein, M.A. and Ajzen, I. (1975), *Belief, Attitude, Intention and Behaviour: A Introduction to Theory and Research*, Addison-Wesley, Reading, MA.

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*, Vol. 14 No. 5, 496-505.

Fonchamnyo, D.C. (2013), "Customers' perception of e-banking adoption in cameroon: an empirical assessment of an extended TAM", *International Journal of Economics and Finance*, Vol. 5 No. 1.

Forsyth, I. (2001), *Teaching and Learning Materials and the Internet*, Psychology Press.

Gazinoory, S. and Afshari-Mofrad, M. (2011), "Ranking different factors which affect E-Learning outcomes", *International Conference on Information and Computer Applications*, *Dubai*, pp. 400-403.

Goh, H.P. (1995), *The Diffusion of Internet in Singapore, Academic Exercise*, Faculty of Business Administration, National University of Singapore.

Haliso, Y. (2011), "Factors affecting information and communication technologies (ICTs) use by academic librarians in South western Nigeria", *Library Philosophy and Practice*, p. 571, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1602&context=libphilprac

Hall, J. and Khan, B. (2002), "Committee on banking supervision, risk management principles for electronic banking", available at: www.bis.org/publ/bcbs98.pdf (accessed 28 June 2015).

Hamburg, A. and Valdma, M. (2011), "Energy supply problems and prospects", *Oil Shale*, Vol. 28 No. 1, pp. 89-100.

Hara, N. and Kling, R. (2000), "Students' distress with a web-based distance education course: an ethnographic study of participants experiences", CSI Working Paper, Centre for social informatics, Indiana University, USA.

Hardman, W. and Robertson, L. (2012), "What motivates employees to persist with online training? One Canadian workplace study", *International Journal of Business, Humanities & Technology*, Vol. 2 No. 5, pp. 66-78.

Hasan, B. and Ali, J.M.H. (2004), "An empirical examination of a model of computer learning performance", *Journal of Computer Information Systems*, Vol. 44 No. 4, pp. 27-34.

Hashim, J. (2008), "Factors influencing the acceptance of web-based training in Malaysia: applying the technology acceptance model", *International Journal of Training and Development*, Vol. 12 No. 4, pp. 253-264.

Heeks, R. (2003), "Most eGovernment-for-development projects fail: how can risks be reduced?", *Institute for Development Policy and Management*, University of Manchester, UK.

Hoang, M.C. (2003), "Current -status of Vietnamese e-commerce", available at: http://unpan1.un.org/intradoc/groups/public/../UNPAN008970.pdf 2014-02-08.

Hsbollah, H.M. and Idris, K.M. (2009), "E-learning adoption: the role of relative advantages, trialability and academic specialisation", *Campus-Wide Information Systems*, Vol. 26 No. 1, pp. 54-70.

Hubbard, R., Vetter, D.E. and Little, E.L. (1998), "Replication in strategic management: scientific testing for validity generalizability, and usefulness", Vol. 19 No. 3, pp. 243-254.

Hunter, J.E. (2001), "The desperate need for replications", *Journal of Consumer Research*, Vol. 28 No. 6, pp. 149-158.

Igbaria, M., Zinatlli, N., Cragg, P. and Cavaye, A. (1997), "Personal computing acceptance factors in small firms: a structural equation model", *MIS Quarterly*, Vol. 21 No. 3, pp. 279-305.

Jaruwachirathanakul, B. and Fink, D. (2005), "Internet banking adoption strategies for development country: the case of Thailand", *Internet Research*, Vol. 15 No. 3, pp. 295-311.

JebaKumar, C. and Govindaraju, P. (2009), "Virtual learning environment: a study of virtual learning environment with reference to perception of college students in Tamilnadu (South India)", *Communication policy research South 4th Conference*, *Negombo*.

Joseph, I.O. (2014), "Issues and challenges in the privatized power sector in Nigeria", *Journal of Sustainable Development Studies*, Vol. 6 No. 1.

Kanuka, H. (2006), "A review of e-learning in Canada: a rough sketch of the evidence, gaps and promising directions: a commentary", *Canadian Journal of Learning and Technology/La revue Canadienne de l'apprentissage et de la technologie*, Vol. 32 No. 3.

Keeney, R.L. (1999), "The value of Internet commerce to the customer", *Management Science*, Vol. 45 No. 4, pp. 533-542.

Kerlinger, F.N. and Lee, H.B. (2000), *Foundations of Behavioural Research*, Harcout College Publishers, Fort Worth.

Kidd, T.T. (2010), *Online Education and Adult Learning: New Frontiers for Teaching Practices*, IGI Globlal, USA.

Kim, D.R., Kim, B.G., Aiken, M.W. and Park, S.P. (2006), "The influence of individual, task, organizational support, and subjective norm factors on the adoption of groupware", *Academy of Information and Management Sciences Journal*, Vol. 9 No. 2, pp. 93-110.

LaRocque, N. and Latham, M. (2003), "The promise of E-learning in Africa: the potential of public-private partnerships", IBM Endowment for the Business of Government, available at: http://info.worldbank.org/etools/docs/library/116120/ethiopia/e-learning_africa.pdf

LaRose, R., Gregg, J. and Eastin, M. (1998), "Audio graphic tele-courses for the web: an experiment", *Journal of computer-mediated communications*, Vol. 4 No. 2.

Lee, Y.C. (2006), "An empirical investigation into factors influencing the adoption of an e-learning system", *Online Information Review*, Vol. 30 No. 5, pp. 517-541.

Lee, Y.H., Hsieh, Y.C. and Chen, Y.H. (2013), "An investigation of employees' use of e-learning systems: applying the technology acceptance model", *Behaviour & Information Technology*, Vol. 32 No. 2, pp. 173-189.

Likert, R. (1967), *The Human Organization: Its Management and Value*, McGraw-Hill, New York, NY.

Liu, S.H., Liao, H.L. and Pratt, J.A. (2009), "Impact of media richness and flow on e-learning technology acceptance", *Computers & Education*, Vol. 52 No. 3, pp. 599-607.

Loh, P.Y.W., Lo, M.C., Wang, Y.C. and Mohd-Nor, R. (2013), "Improving the level of competencies for small and medium enterprises in Malaysia through enhancing the effectiveness of E-training: a conceptual paper", *Labuan e-Journal of Muamalat and Society*, Vol. 7 No. 1, pp. 1-16.

Lorenzetti, J.P. (2005), "How e-learning is changing higher education: a new look", *Distance Education Report*, Vol. 22 No. 7, pp. 4-7.

Luambano, I. and Julita, N. (2004), "Internet use by students of the University of Dar es Salaam", *Library Hi Tech News*, Vol. 21 No. 10, pp. 13-17.

Lubega, J.T. and Mugarura, F.S. (2008), "A generic E-Learning framework: a case study faculty of computing and information technology (CIT) Makerere University", *Strengthening the Role of ICT in Development*, Fountain Publishers, Kampala, pp. 340-350.

McKay, D.T. and Brockway, D.W. (1989), "Building IT infrastructure for the 1990s", *Stage by Stage: Nolan Norton and Company*, Vol. 9 No. 3, pp. 1-11.

McKay, E. and Vilela, C. (2011), "Corporate sector practice informs online workforce training for Australian government agencies: towards effective educational-learning systems design", *Australian Journal of Adult Learning*, Vol. 51 No. 2, p. 302.

Macharia, J. and Nyakwende, E. (2009), "Factors affecting the adoption and diffusion of internet in higher educational institutions in Kenya", *Journal of Language, Technology & Entrepreneurship in Africa*, Vol. 1 No. 2, pp. 6-23.

Machogu, A.M. and Okiko, L. (2012), "The perception of bank employees towards cost of adoption, risk of innovation, and staff training's influence on the adoption of information and communication technology in The Rwandan Commercial Banks", *Journal of Internet Banking & Commerce*, Vol. 17 No. 2, pp. 1-15.

Martin, A. (2003), "Adding value to simulation/games through internet mediation: the medium and the message", *Simulation & Gaming*, Vol. 34 No. 1, pp. 23-38.

Martins, L.L. and Kellermanns, F.W. (2004), "A model of business school students acceptance of a web-based course management system", *Academy of Management Learning and Education*, Vol. 3 No. 1, pp. 7-26.

Masie, E. (2001), *E-learning: If We Build It, Will They Come?*, The Masie Centre and ASTD Report, ASTD, Alexandria, VA.

Mathieson, K. (1991), "Predicting user intentions: comparing the technology acceptance model with the theory of planned behaviour", *Information System Research*, Vol. 84 No. 1, pp. 123-136.

Maughan, G.R. (2005), "Electronic performance support systems and technological literacy", *The Journal of Technology Studies*, Vol. 31 No. 1, pp. 49-56.

Middleton, C. (2011), "Understanding the costs and benefits associated with advanced e-business solutions in Canadian small and medium–sized enterprises", available at: www.ryerson.ca/~cmiddlet/ourresearch/ebusiness_Canadian_SMEs.pdf

Minnaar, A. (2011), "Student support in e-learning courses in higher education–insights from a metasynthesis: a pedagogy of panic attacks", *Africa Education Review*, Vol. 8 No. 3, pp. 483-503.

Mohsin, M. and Sulaiman, R. (2013), "A study on e-training adoption for higher learning institutions", *International Journal of Asian Social Science*, Vol. 3 No. 9, pp. 2006-2018.

Muhammed, B. (2005), "Checking the odds", *NEPA Review Magazine*, Vol. 4.

Muilenburg, L.Y. and Berge, Z.L. (2005), "Student barriers to online learning: a factor analytic study", *Distance education*, Vol. 26 No. 1, pp. 29-48.

Nchunge, D.M., Sakwa, M. and Mwangi, W. (2013), "Assessment of ICT infrastructure on ICT adoption in educational institutions: a descriptive survey of secondary schools in Kiambu county Kenya", *Journal of Computer Science & Information Technology*, Vol. 1 No. 1, pp. 32-45.

Ndubisi, N.O. and Jantan, M. (2003), "Evaluating IS usage in Malaysian small and medium sized firms using the technology acceptance model", *Logistics Information Management*, Vol. 16 No. 6, pp. 440-450.

News Agency of Nigeria (2009), "FG to train 4600 civil servants", News Agency of Nigeria, 9 December, "HOSF".

Ngai, E.W.T., Poon, J.K.L. and Chan, Y.H.C. (2007), "Empirical examination of the adoption of WebCT using TAM", *Computers & Education*, Vol. 48 No. 2, pp. 250-267.

Nneka, E.H. (2010), "The perspective of e-learning and libraries in Africa: challenges and opportunities", *Library Review*, Vol. 59 No. 4, pp. 274-290.

Nwabufo, B.N., Umoru, T.A. and Olukotun, J.O. (2013), "The challenges of e-learning in tertiary institutions in Nigeria", available at: http://conference.pixel-online.net/edu_future2012/common/download/Paper_pdf/76-EL04-FP-Nwabufo-FOE2012.pdf

Oduwole, A.A. (2004), "Impact of internet use on agricultural research outputs in Nigerian universities of Agriculture", *Library Hi Tech News*, Vol. 21 No. 6, pp. 12-15.

Okiki, C.O. (2011), "Information communication technology support for an e-learning environment at the University of Lagos, Nigeria", *Library Philosophy and Practice*, p. 610, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1642&context=libphilprac

Omoigui, N. (2005), "The information age has a key to Nigeria's renaissance: opportunities risks, and geopolitical implications", available at: www.waado.org/nigerian_scholars/archive/opinion/NosaTech.html (accessed 7 August 2015).

Ong, C.S., Lai, J.Y. and Wang, Y.S. (2004), "Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies", *Information & management*, Vol. 41 No. 6, pp. 795-804.

Ongori, H. (2009), "Role of information communication technologies adoption in SMEs: evidence from Botswana", *Research Journal of Information Technology*, Vol. 1 No. 2, pp. 93-104.

Oyadonghan, J.C. and Eke, F.M. (2011), "Factors affecting student use of information technology: a comparative study of Federal University of Technology, Owerri and Niger Delta University, Amazoma", *Library Philosophy and Practice*, p. 505, available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1523&context=libphilprac

Oyerinde, O.D. (2014), "A review of challenges militating against successful e-learning and m-learning implementations in developing countries", *International Journal of Science and Advanced Technology*, Vol. 4 No. 6.

Özgen, C. (2012), "Toward an understanding of acceptance of electronic performance support systems: what drives users 'perceptions regarding usefulness and ease of use?", *Doctoral dissertation*, Middle East Technical University.

Park, S.Y. (2009), "An analysis of the technology acceptance model in understanding university students' behavioural intention to use e-learning", *Educational Technology & Society*, Vol. 12 No. 3, pp. 150-162.

Passmore, D. (2000), "Impediments to adoption of web-based course delivery among university faculty", *ALN Magazine*, Vol. 4 No. 2.

Phiri, A.C., Foko, T. and Mahwai, N. (2014), "Evaluation of a pilot project on information and communication technology for rural education development: a Cofimvaba case study on the educational use of tablets", *International Journal of Education and Development using Information and Communication Technology*, Vol. 10 No. 4, p. 60.

Psycharis, S. (2005), "Presumptions and actions affecting an e-learning adoption by the educational system complementation using virtual private networks", available at: www.erodl.org/materials/contrib/2005/sarantos_psycharis.htm

Punch News (2013), "Electricity in 2013: many movements, little progress", Punch News, 28 December.

Purnomo, S.H. and Lee, Y.H. (2013), "E-learning adoption in the banking workplace in Indonesia an empirical study", *Information Development*, Vol. 29 No. 2, pp. 138-153.

Ramayah, T., Ahmad, N.H. and Hong, T.S. (2012), "An assessment of e-training effectiveness in multinational companies in Malaysia", *Educational Technology & Society*, Vol. 15 No. 2, pp. 125-137.

Rose, J. and Fogarty, G.J. (2006), "Determinants of perceived usefulness and perceived ease of use in the technology acceptance model: senior consumers' adoption of self-service banking technologies", *Proceedings of the 2nd Biennial Conference of the Academy of World Business, Marketing and Management Development: Business Across Borders in the 21st Century 2*, Vol. 2 No. 2, pp. 122-129, Paris.

Rouibah, K. (2008), "Social usage of instant messaging by individuals outside the work place in Kuwait: a structural equation model", *Information Technology & People*, Vol. 21 No. 1, pp. 34-68.

Rym, B., Olfa, B. and Mélika, B.M.B. (2013), "Determinants of e-learning acceptance: an empirical study in the Tunisian context", *American Journal of Industrial and Business Management*, Vol. 3 No. 3, p. 307.

Saadé, R. and Bahli, B. (2005), "The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model", *Information & Management*, Vol. 42 No. 2, pp. 317-327.

Sabrina, O.S. (2007), "Students adoption of the internet in learning: applying the theory of acceptance model", Paper presented at National Conference "Inovasi Dalam Menghadapi Perubahan Lingkungan Bisnis", Universitas Trisakti, Jakarta.

Salawudeen, O.S. (2010), E-learning Technology, *The Nigerian Experience*, Roger Printing and Publishing, Abuja.

Sambo, A.S. (2008), "Matching electricity supply with demand in Nigeria", *International Association for Energy Economics*, Fourth Quarter, pp. 32-38, available at: www.iaee.org/documents/newsletterarticles/408sambo.pdf

Sawang, S., Newton, C. and Jamieson, K. (2013), "Increasing learners' satisfaction intention to adopt more e-learning", *Education + Training*, Vol. 55 No. 1, pp. 83-105.

Selim, H.M. (2005), "Critical success factors for e-learning acceptance: confirmatory factor models", *Computers and Education*, Vol. 49 No. 2, pp. 396-413.

Strother, J.B. (2002), "An assessment of the effectiveness of e-learning in corporate training programs", *The International Review of Research in Open and Distance Learning*, Vol. 3 No. 1.

Tan, M. and Teo, T.S. (2000), "Factors influencing the adoption of Internet banking", *Journal of the AIS*, Vol. 1 No. 1, p. 5.

Tan, S.H. (2008), "The antecedents and outcomes of user satisfaction in e-training", *Doctoral Dissertation*, USM, Penang.

Thompson, T. (2010), "Assessing the determinants of information technology adoption in Jamaica's public sector using the technology acceptance model", *ProQuest LLC*, UMI Dissertations Publishing, available at: http://search.proquest.com.eserv.uum.edu.my/business/docview/751261453

Tornatzky, L.G. and Klein, R.J. (1982), "Innovation characteristics and innovation adoption-implementation: a meta-analysis of findings", *IEEE Transactions on Engineering Management*, Vol. 29 No. 1, pp. 28-45.

Transparency International (2014), "Corruption by country/territory", available at: www.transparency.org/country#NGA (accessed 13 August 2014).

Unwin, T. (2008), *Survey of e-Learning in Africa*, Royal Holloway, University of London.

Vanguard News (2014), "Nigeria needs five years to achieve stable power supply", available at: www.vanguardngr.com/2014/01/

Venkatesh, V. (1999), "Creation of favourable user perceptions: exploring the role of intrinsic motivation", *MIS quarterly*, Vol. 23 No. 2, pp. 239-260.

Venkatesh, V. and Bala, H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision sciences*, Vol. 39 No. 2, pp. 273-315.

Venkatesh, V. and Davis, F.D. (2000), "A theoretical extension of the technology acceptance model: four longitudinal field studies", *Management Science*, Vol. 46 No. 2, pp. 186-204.

Webster, J. and Hackly, P. (1997), "Teaching effectiveness in technology mediated distance Learning", *Academy of Management Journal*, Vol. 40 No. 6, pp. 1282-1309.

Williams, C. (2002), "Learning on-line: a review of recent literature in a rapidly expanding field", *Journal of Further and Higher Education*, Vol. 26 No. 3, pp. 263-272.

Wu, H. (2009), "On the basis and predicament of applying organizational support theory to chinese public human resource management", *International Journal of Business and Management*, Vol. 3 No. 12, p. 102.

Wu, J. and Wang, S. (2005), "What drives mobile commerce? An empirical evaluation of the revised technology acceptance model", *Information & Management*, Vol. 42 No. 5, pp. 719-729.

Yi, M.Y. and Im, K.S. (2004), "Predicting computer task performance: personal goal and self-efficacy", *Journal of Organizational and End-user Computing*, Vol. 16 No. 2, pp. 20-38.

Yiong, B.L.C., Sam, H.K. and Wah, T.K. (2008), "Acceptance of e-learning among distance learners: a Malaysian perspective", *Proceedings: Ascilite Conference*, available at: www.ascilite.org.au/conferences/melbourne08/procs/lim.pdf

Further reading

Aharoni, Y. and Burton, R.M. (1994), "Is management science international: in search of universal rules", *Management Science*, Vol. 40 No. 1, pp. 1-3.

Dahlberg, T., Mallat, N., Ondrus, J. and Zmijewska, A. (2008), "Past, present and future of mobile payments research: a literature review", *Electronic Commerce Research and Applications*, Vol. 7 No. 2, pp. 165-181.

Derouin, R.E., Fritzsche, B.A. and Salas, E. (2005), "E-learning in organizations", *Journal of Management*, Vol. 31 No. 6, pp. 920-940.

Durvasula, S., Andrews, J.C., Lysonski, S. and Netemeyer, R.G. (1993), "Assessing the cross-national applicability of consumer behaviour models: a model of attitude toward advertising in general", *Journal of Consumer Research*, Vol. 19 No. 4, pp. 626-636.

Kleijnen, M.H.P., de Ruyter, K. and Wetzels, M.G.M. (2004), "Consumer adoption of wireless services: discovering the rules, while playing the game", *Journal of Interactive Marketing*, Vol. 18 No. 2, pp. 51-61.

Corresponding author

Muhammad Awais Bhatti can be contacted at: awaisbhatti_786@yahoo.com