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**E-Learning Technologies Adoption Framework for Enhanced Productivity of Small and
Medium Enterprises in Kenya**

NICHOLAS MBUGUA THUO

072442

**Submitted in partial fulfillment of the requirements for the degree of Master of Science
in Computer Based Information Systems**

**Faculty of Information Technology
Strathmore University
Nairobi, Kenya**

June, 2016

DECLARATION

I declare that this work and has not been previously submitted and approve for the award of a degree by this or any other university. To the best of my knowledge and belief, the dissertation contains no material published or written by another person except where due reference is made in the dissertation itself.

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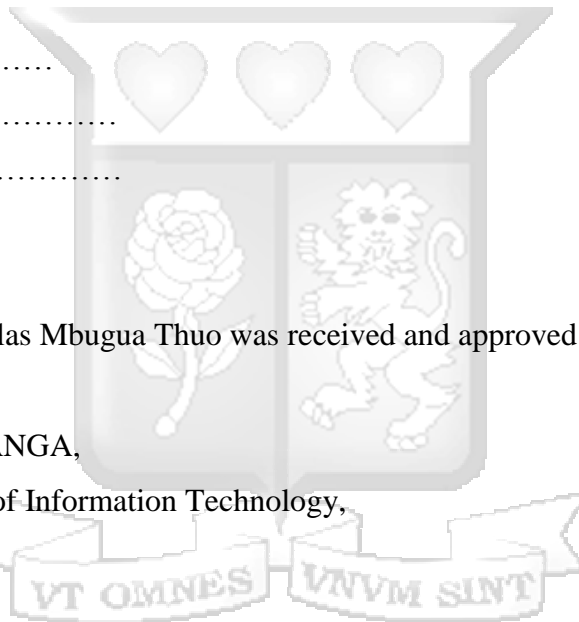
Approval

The dissertation of Nicholas Mbugua Thuo was received and approved by the following:

Prof. REUBEN MARWANGA,
Senior Lecturer, Faculty of Information Technology,
Strathmore University,

Dr Joseph Orero,
Dean, Faculty of Information Technology,
Strathmore University,

Prof. Ruth Kiraka,
Dean, School of Graduate Studies,
Strathmore University.

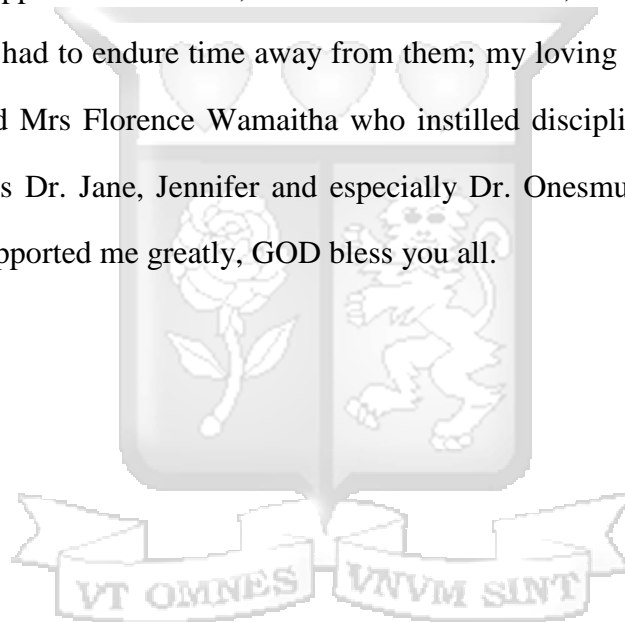


Abstract

The potential of e-learning in transforming the performance of Small and Medium Enterprises (SMEs) through its effects on employee productivity and hence organizational output is acknowledged in literature in both developing and developed countries. The ubiquitous nature of e-learning offers unlimited opportunity for employees to engage in learning and act as a catalyst for transformation through lifelong learning. However, there is a dearth of empirical evidence in the Kenyan context on adoption of e-learning in SMEs as well as success. The purpose of this study was therefore to examine usage of e-learning by SMEs and the outcomes as measured by performance of SMEs in Kenya with a view to proposing a framework for enhanced adoption of e-learning in these organizations. The study was guided by the Roger's Diffusion of Innovation Theory, a theory that identifies the determinants of the uptake of an innovation such as e-learning. The study adopted the descriptive design entailing a survey of 100 HR Managers and 100 employees of SMEs in the 2015-16 top 100 SMEs from a survey done annually by KPMG Kenya and Nation Media Group. A sample of 50 HR Managers and 50 employees were selected for the survey using simple random sampling techniques and purposive sampling respectively. The SME HR questionnaire and the SME Employee questionnaire were used to collect both quantitative and qualitative data on the extent, determinants, and outcomes of use of e-learning in the SMEs. Quantitative data analysis was done through descriptive statistics to demonstrate the extent, outcomes and challenges of adoption of e-learning in SMEs. Qualitative through thematic grouping and descriptions. With regards to the extent of adoption of e-learning in the SMEs the study found limited adoption of e-learning, with only 10 firms out of the study 50 SMEs reporting adoption. On the influence of employer factors on adoption, the perceptions were positive on all aspects such as innovativeness and IT competencies. On the employee aspects of e-learning usage, the study found positive perceptions on ease of use and user satisfaction, which were in turn, proxy measures of satisfaction with the quality of the information on the system and the system itself. On the outcomes of e-learning on employers and employees, the study reported positive perceptions on these outcomes. The most influential barriers were organizational and technical. The study therefore concludes that although there is limited adoption of e-learning among SMEs, there are many positive characteristics among adopting firms. The study therefore recommends more support for infrastructure to support e-learning for SMEs among government and the business sector and more studies on the influence of pedagogical aspects such as content and media design.

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Abbreviations/Acronyms

HR	- Human Resource
ICT	- Information and Communication Technology
IS	- Information System
IT	- Information Technology
KBS	- Kenya Business Survey
LMS	- Learner Management System
SMEs	- Small and Medium Enterprises



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Chapter 1: Introduction

1.1 Background

In the twenty first century, knowledge is becoming a fundamental basic need for any meaningful economic activity. For instance, the World Bank Institute (2015) recognizes a knowledge economy as one that rests on four pillars that include first and foremost being in possession of a supportive economic and institutional regime that avails a conducive environment for the efficient use of existing and new knowledge and the flourishing of entrepreneurship.

Secondly, there is need for an educated and skilled labor force that have the ability to create, share, and use knowledge for the purposes of improving the efficiency in the production process. The third pillar is a dynamic information infrastructure to facilitates the effective communication, dissemination, and processing of information. Finally such an economy should be in possession of an efficient innovation system of firms, research centers, universities, consultants, and other organizations to taps into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology (Anderson, 2010).

This organizational learning has been enhanced by Information and Communication Technologies (ICTs) throughout the world. For instance ICTs have contributed immensely to the emergence of the knowledge-based economy and society in a number of ways that may implicitly include enabling the world to become a global village by connecting countries that were separated by distance thus exchanging of ideas and information that is crucial for a faster economic growth.

According to the World Bank (2015), growth and development of ICT has enabled emergence of learning technologies that have shifted emphasis from traditional teacher-centered approaches to more interactive and learner-based ones (World Bank, 2015). This implies that teaching of concepts and new methodologies of production in industries have been affected by the ICT and thus producing an exponential growth of a nation. At the Lisbon summit in 2000, the European Union set a goal to make the union “the most competitive and dynamic knowledge-driven economy in the world” by developing e-learning for its citizens (Medarova, Bures & Otcenaskova ,2012).

1.1.1 Small and Medium Enterprises in Kenya

Kenya is one of African's emerging economies whose economic growth trend has shown an impressive growth path. It is expected that Kenya will be a middle income earner by 2030 as it is captured in its Vision 2030. SMEs are expected to become major drivers for industrialization by assisting them improve productivity and innovation. To achieve this, the country has tried to support the small and medium enterprises (SMEs) in several fronts and has laid the ICT infrastructure as an avenue to perform even better.

Currently it is estimated that over 98 percent of all business in Kenya are in the informal sector otherwise known as SMEs (Kenya National Bureau of Statistics, 2014). This is about 7.5 million of the current population, majority of the entrepreneurs being the youths- the most productive workforce. These figures are projected to increase in 2015/16. This sector is very crucial in Kenya as over 92 percent of all employment in the country is either directly or indirectly linked to SMEs (KNBS, 2014). It also account slightly over 40 percent of the gross domestic product and the Kenyan government has been one of the pioneer African countries to recognize its importance and thus developed official policies that are geared towards its growth.

1.1.2 E-Learning in SMEs

The adoption of e-learning in SMEs is still very low as compared to the large companies. Large companies, particularly multi-nationals, appear to have a reasonably long-term vision of e-learning. These large companies have integrated e-learning solutions as part and parcel of their staff development programs, to support knowledge management practices as well as dissemination of tacit knowledge to gain advantage over the competitors (Nunes, McPherson, Annansingh, Bashir & Patterson, 2009). The authors suggest that there exist very little interest in e-learning among the SME entrepreneurs coupled with poor long-term planning on the use of e-learning.

Due to their financial constraints, small firms tend to invest less in training of employees than large firms. According to Harkinson (1994), small firms perceive training to be very costly and benefits are not considered to have a significant influence on performance. SMEs are characterized by high labor turnover as the firms are very volatile and closely exhibiting a near perfect competitive market structure. This turnover enhances the impression that the investment is unprofitable. Their small budget has also been cited by some reports as being responsible for low commitment to training initiatives (Storey & Westhead, 1996). SMEs generally lack the funding to produce in-house or outsourced specific e-learning applications.

They tend to buy generic simulations which lack organization-specific focus and this has a tendency to alienate learners as Nunes et al. (2009) observe.

The advantages of e-learning are in two folds: cost advantage and its flexibility (Homan & Macpherson, 2005). If well used, it reduces training time, saves travelling cost away from jobs in order to acquire skills as well as the absence of unhealthy competition in its use among the workers. (Nunes et al., 2009). It has been proved to be very flexible in as far as delivery of information or idea is concerned.

1.1.3 Impact of E-Learning in SMEs

Utilization of learning technology in SMEs generates possibilities for solving thorny issues of budget and size with regards to economies of scale with respect to the number of employees that are very common in this sector of the economy. E-learning has been considered “as an attractive complement or even an alternative to traditional training methods” (Long & Smith, 2004), in the SME taking into account the limited time and resources constraints they face (Moon, Birchall, Williams & Vrasidas, 2005). They therefore need an elaborate mechanism to solve their problems at work which have implications for employee training can be resolved through the adoption of learning technologies in their daily work (Admiraal & Lockhorst, 2009).

To capture the impact of e-learning in SMEs different analyses has been adopted. Evaluation studies have concentrated on the quantitative criteria that include: an increase in individual job performance; improvement in enterprises’ general productivity as well as increased efficiency in the production process through reduction of costs, time and resources (Nunes et al., 2009). Such evaluation research is fairly common in large companies but quite thin on SMEs. Limited research activity that links e-learning to creativity and innovation in business processes, products and services in SMEs is observed. Yet, the survival of SMEs in a competitive environment is closely linked to agility and ability to adapt to market changes and emerging trends.

To convince managers in SMEs to invest in e-learning, research findings that links a highly-trained and literate workforce with the ability to innovate, adopt and survive are crucial. It is important for SMEs to have a cost effective, highly accessible and efficient means of knowledge transfer. Further, Caudron, (1999) advocates that staff training should be personalized to match the needs of every individual.

Whereas literature suggests the importance of workforce development in the SMEs sector for firm productivity, there is a lack of empirical evidence in the Kenyan context on several critical areas. These include evidence on the extent to which e-learning has been adopted by SMEs, its impact on workforce development and firm productivity, the influence of the factors that account for the observed impact of e-learning such as IT infrastructure (Caudron, 1999), SMEs culture (Hardaker, Dockery & Sabki, 2007), managers' attitudes towards e-learning solutions (Admiraal & Lockhorst, 2009; Bierli & Klobas, 2003), and challenges and barriers facing adoption of e-learning in the SMEs. These are the issues at the root of the current study.

1.2 Problem Statement

In present time's highly competitive global economy, employees of particularly SMEs must have the latest knowledge and technological skills. The main reason lies behind the fact that e-learning, as a key educational practice and strategic organizational tool, has been closely linked to higher profits and lower employee turnover in SMEs (Admiraal & Lockhorst, 2009).

Therefore, to nurture a highly trained and educated workforce, SMEs have to invest enough resources for developing e-Learning solutions for their training needs (DeRouin, Fritzsche & Salas, 2005). Information can be shared and knowledge exchange among learners can be enriched through the concepts of interaction, collaborative learning, and the compilation of knowledge. Accordingly, e-Learning transforms the learning experience by providing valuable interactive tools, such as forums, blogs, chats, blackboards, and newsgroups, which can be used to interact with other users with similar interests and obtain or disseminate knowledge anytime, anywhere (Wang, 2011). Chang (2011) notes that though the aim and expectation of education technology is to transform teaching and learning there is apparent failure in its use due to lack of understanding of the human learning process and lack of training in new technologies available to the main actors responsible for e-learning in SMEs.

Raymond, Uwizeyemungu, Bergon and Gauvin (2012) bring forth from previous research factors that hinder e-learning adoption, diffusion and exploitation in SMEs that include paucity of IT infrastructure, inadequate e-learning offer, specificity of SME's culture, manager's attitudes towards e-learning solutions or not being convinced of e-learning benefits. This points to lack of preparedness by SMEs to take on new forms of learning such as e-learning as a competitive tool (Hamburg, Brien & Engert, 2014). Typically in SMEs, learning is 'learning by doing' on the job. Hamburg et al. (2014) note without use of e-learning technology, knowledge generated in SMEs remain tacit, undocumented and unshared.

SMEs do face challenges of accessing the new technologies as they are not easily available. The pressure of work offers limited time to invest in training. Due to limited labor force, it's also challenging for employees to get time away from work for training.

Despite the significance of e-learning among the SMEs, little empirical attention has been given to how learning technology has impacted this sector that accounts for over 98 percent of all business in the country and to what challenges and barriers they face in adoption of the learning technology. Lack of a framework to guide SMEs adopt e-learning means low productivity. This study therefore wishes to fill this gap by investigating the top 100 SMEs in 2015/2016 from a survey done annually by KPMG Kenya and Nation Media Group with the main aim of examining the extent of adoption of e-learning, identifying the challenges facing adoption, and proposing a framework for the adoption of e-learning among the SMEs organization.

1.3 Objectives

- i. To identify factors influencing e-learning adoption by SMEs in Kenya.
- ii. To identify challenges facing e-learning adoption by SMEs in Kenya.
- iii. To propose a framework that will enhance successful e-learning adoption by SMEs in Kenya.
- iv. To validate the proposed framework.

1.4 Research Questions

- i. What are the factors influencing e-learning adoption by SMEs in Kenya?
- ii. What are the challenges facing adoption of e-learning by SMEs in Kenya?
- iii. How can a framework be implemented to enhance successful e-learning adoption by SMEs in Kenya?
- iv. How valid is the framework of e-learning adoption by SMEs?

1.5 Justification and significance

E-learning is a very crucial learning platform that equips the employees with an opportunity to increase their knowledge base and skills that have an implication for firm productivity. The technology enables employees to overcome time and space limitations of engaging in lifelong learning to remain productive, acquire new knowledge and solve problems at work through sharing of best practice. This is especially important for the SMEs

sector due to the unique challenges they operate in and their imperative to survive and thrive in competitive environments in which learning becomes a key survival strategy.

This study will therefore benefit the policy makers, the SMEs organizations, the private investors as well as the academic body through the creation of a framework through which the adoption of the e-learning technologies will be simplified. Given that the SMEs in Kenya are the majority of the business (at 98 percent), Kenya as a country will greatly benefit through the increased output and competitive advantage. This will enhance fulfillment of the country's vision of becoming a middle income country by the year 2030 by becoming competitive and innovative.

1.6 Scope

The study was confined to SMEs as a category of firms. The study was conducted to the top 100 SMEs for the year 2015-16 from a survey done annually by KPMG Kenya and Nation Media Group. The learning technology under focus was e-learning and not any other learning technology.

1.7. Limitations of the Study

The study was confined to the top 100 list of SMEs from a survey done annually by KPMG Kenya and Nation Media Group and therefore the findings may not be generalizable to the population of SMEs in Kenya. The study will depend on questionnaires for the quantitative and qualitative data required through both close and open-ended questions will not involve the use of interview schedules for in-depth qualitative data. Time and cost limitation to cover majority of SMEs.

Chapter 2: Literature Review

2.1. Introduction

This chapter discusses the definitional aspect of e-learning and SMEs. The aspects covered include environment of workplace e-learning, factors influencing adoption and assimilation of e-learning in SMEs, outcome of E-learning adoption and challenges faced in adoption.

2.2 Introduction to E-Learning and SMEs

Welsh, Wanberg, Brown and Simmering (2003) define E-learning as “the use of computer network technology, primarily over or through the internet, to deliver information and instruction to individuals”. Web-based communication, collaboration and knowledge transfer tools are used to support users’ active learning thus help overcome time and space barriers (Kerry & Bauer, 2004; Lee, Yon & Lee, 2009). E-learning can be classified as synchronous, asynchronous and blended learning. Synchronous e-learning facilitates real-time interaction between learners and instructors. On the other hand, asynchronous e-learning is flexible to allow learners study independently of instructors at their own pace and time. Blended e-learning integrates both synchronous and asynchronous mode of study. The concept of Web 2.0 facilitates new levels of interaction, information sharing and collaboration (Hamburg et al., 2014)

Globally, the definition of Small and Medium Enterprises (SME) is varied with some definitions concentrating on number of employees while others refer to the firms’ turnover. The United States and European Union prefer definition of SME in terms of number of employees; US less than 500 while Europe less than 250 employees. According to East Africa Top 100 SMEs contest which is run by KPMG and Nation Media Group, they define an SME as an enterprise with turnover of between KES 70 million to KES1billion. The firms are not listed in the stock exchange and have at least three years of audited financial statements. In this study we restrict our definition to the number of employees guided by the European standards; less the 250 employees.

Craig (1996) defines workplace learning as training that occurs in the premises of the firm and entails the means, processes, and activities by which employees learn in the workplace from basic skills to high technology and management practice that are immediately applicable to workers’ jobs, duties, and roles. Increased intensive competition, industrial change, and globalization have forced organizations to search for new ways to improve competitive

advantage (Clarke & Hermans, 2001). This means that continuous innovation becomes an important goal in which knowledge is seen as a necessary core resource, and learning is viewed as a crucial process. Caudill (2013) also elaborates that corporate e-learning is training, procedural learning, behaviorism, and autonomous. Further, Caudill (2013) explains that providing opportunities to employees occur through the media of e-learning. Minimol (2012) outlines the advantages for SMEs to implement e-learning as follows:

- i. Better flexibility in providing the workers' or learners' requirements;
- ii. Better flexibility in the workplace;
- iii. Timely and adequate access to company information;
- iv. Ample cost savings owing to the removal of travel and additional expenses; and
- v. No office space needed.

The downside of implementing e-learning in SMEs is that adequate IT infrastructure is required and investment of knowledgeable and qualified technical staff is essential (Minimol, 2012).

2.2.1 Environment of Workplace E-Learning

According to Boud and Garrick (1999), the main function of workplace learning is to improve performance for the benefit of the organization. To them learning is a social investment that needs to put in place for a conducive environment that may include the learner, learning surroundings, learning content and social context. The learner is the main actor in the learning environment (Clarke & Hermans, 2001).

Learner

Workers in SMEs have a diverse learning needs based on their distinct job responsibilities, educational background as well as their experiences. This means that these workers will engage in learning if the type of learning on offer will satisfy their learning needs mostly based on their personal and organizational requirements (Bontis, Crossan & Hullard, 2002).

Organization

Any organization that has ambitions to perform better requires a learning environment (Wang, 2011). Such learning do focus on organizational systems like job and reward, structures, policies, and institutional forms of knowledge that link individual and organizational learning (Wang, 2011). It is the hope of the organization that individual learning can be applied

back to job and utilized to enhance organizational performance as a result of application of new skills (Wang, 2011).

Social Context

Workplace learning environment can be described as a knowledge society that builds community of practice (Wang, 2011). Learning in the workplace creates social networks between learners. This facilitates creation and transfer of knowledge among individuals, groups, and organizations (Wang, 2011). According to Nonaka and Takeuchi (1995) knowledge created by individuals is amplified and crystallized during the process of informal communities of social interaction within the organization, and interaction between the organization and its surroundings.

Learning content

Workplace learning content is contextual in the sense that knowledge in the workplace is disseminated within an organization and arises from employees' daily activities and interaction with the working environment (Raelin, 1998). It is important for employees and organizations to think of new ideas and adjust learning process in the aim improving organizational performance. To facilitate learning practice, knowledge assets such as learning materials, assessment packages, and discussion messages accumulated through workplace learning processes should be well organized, updated, and maintained for continuous learning (Blundell, Dearden, Meghir & Sianesi, 1999)

Khan (2012) identifies eight basic pillars of e-Learning: pedagogy, technology, interface design, evaluation, management, resource support, ethics, and institutional issues. These are illustrated in Figure 2.1.

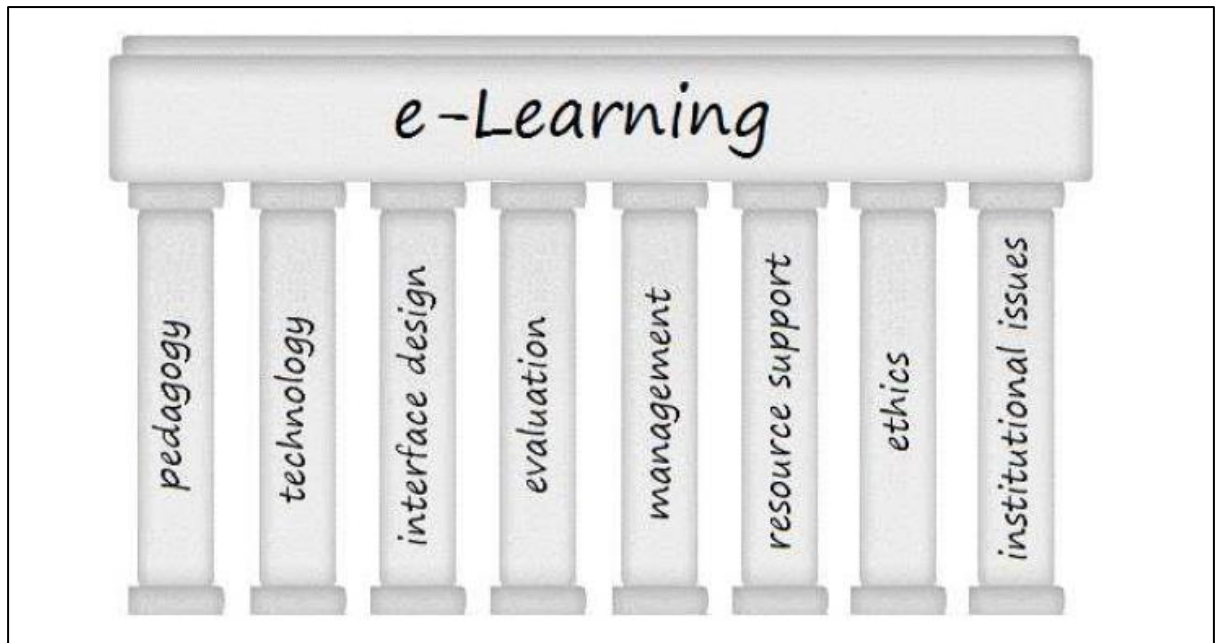


Figure 2.1. A framework for e-learning (Adapted from Khan, 2012)

2.2.2 Forms of learning

2.2.2.1 Informal Learning

Hamburg et al. (2014) depict Jay Cross “a champion of informal learning used in SMES and systems thinking”. Jay’s greatest calling is to help people improve their performance on the job and satisfaction in life. His underlining philosophies are that companies can use informal learning combined with other forms to “improve knowledge worker productivity; transform an organization from near-bankruptcy to record profits; generate fresh ideas and increase innovation; reduce stress, absenteeism, and health care costs; invest development resources where they will have the most impact; increase professional growth; cut costs and improve responsiveness with self-service learning” (Cross, 2007).

The approach which seems useful in the context of improving learning and cooperation within SMEs and external experts is building Communities of Practice (CoPs) who are oriented to learning and social aspects (Hamburg et al., 2014). Communities of Practice are made up of voluntary members who share knowledge, ideas and interests and act as mentors to each other (Hamburg et al., 2014). They offer new opportunities for knowledge management and learning processes by using novel forms of social interaction (Hamburg et al., 2014). CoPs lie between a team work structure and loose contact between various interested actors (Hamburg, 2011b). Web-based environments improve efficiency of Communities of Practice by fostering interactions across the members. This is evidence in two European projects.

European project SIMPEL of 2008, Moodle was used as platform to create Communities of Practice between European Union partners to elaborate models and strategies for sustainable learning in SMEs between project partners and external experts (Hall & Hamburg, 2009). In ReadiSME project, Moodle was used as a Community of Practice for the wider project community to: elaborate a Model framework for Life Long learning Readiness in SMES and to gather useful tools for e-learning in SMEs (Engert & Petschenka, 2011a).

2.2.2.2 Problem Based Learning

According to Sendag and Ferhan (2010) the approach integrates several learning theories: authentic learning, active learning, and social learning. Learners direct their own learning and a mentor facilitates the learner in defining, researching, developing relevant content and solving problems. Hamburg et al. (2014) advocates that it is an excellent training method for SMEs as the context is work based environment, it allows the learner who is a worker to develop skills relevant to the needs of the company hence such skills will be used to sustain the company beyond the initial training. The cost of training is low as it is focused to the issue to be tackled. The advantage of the approach is that it is used to solve the problems for the SME thus providing an immediate return (Bell, 2010; Walters & Sirotak, 2011).

Problem based learning can be combined with Communities of Practice and social media to provide an opportunity for communication between a mentor and mentee; to work with peers and experts inside and outside of the company to find potential solutions to the problem or approaches to solving the problem (Hamburg et al., 2014).

2.2.2.2 Social Learning

This approach is enhanced by the explosive growth of social media technologies. The media allows conversation, sharing, collaboration and exchange of information. It allows employees to learn by connecting with each other in a wider cycle (Hamburg et al., 2014). Social learning means learning by observing, conversing, asking in formal and informal forms (Hamburg et al, 2014). It facilitates collaboration, community building within and across organizations. Social media based on Web 2.0 and 3.0 (Hamburg, 2011a, 2012a) offer the premises for a fast acquisition of knowledge and support and facilitates social learning within the communities (Hamburg et al., 2014). Social media tools like Internet forums, weblogs, social blogs, micro blogging, wikis, podcasts, sharing pictures, video, rating and social bookmarking are easy to create a more dynamic community and provide an on-going conversation benefiting the members (Hamburg et al., 2014).

2.3 E-learning adoption frameworks

2.3.1 Roger's Diffusion of Innovations Theory

Fernald, Solomon and Brandley (1999) defined diffusion “as the process by which an innovation is adopted and gained acceptance by members of a certain community. Four major factors interact to influence the diffusion of an innovation”. These factors are: the innovation itself, communication channels, time and social system where the innovation is introduced. First and foremost, the theory states that the variance of the rate of adoption of innovations is explained by five attributes namely:

- i. relative advantage, the degree to which an innovation is perceived as better to existing practice
- ii. compatibility, with the potential adopter's current way of doing things and social norms
- iii. complexity, the degree to which an innovation is perceived as relatively difficult to understand and use by its potential adopters
- iv. Trial ability, the ease which the innovation can be tested by a potential adopter
- v. Observability, the ease with which the innovation can be evaluated after trial.

Rogers also noted that time determines adoption of an innovation. In his view, the rate of adoption of an innovation was likely to increase with time as more people become aware of its relative advantage. Finally, the diffusion of an innovation within society was seen to depend on social structure, norms and opinion leaders who influence its adoption.

2.3.2 Theory of Reasoned Action and Theory of Planned Behaviour

The theories were conceptualized by Fishbein and Ajzen (1975) and Ajzen and Fishbein(1980) to explain that external variables which are attitude, subjective norm and perceived control in an individual have significant influence towards performing a specific behavior. They have been applied in diverse areas such as technology adoption. Attitude is belief that adoption of technology will result to positive outcomes (Allan & Lawless, 2005). Subjective norm to an individual placed with decision making role in a firm is determined by whether important individuals or groups such as employees think that adoption of technology is appropriate. Perceived control refers to assessment of whether it is feasible to adopt technology with the available resources (Cheng, 2011).

2.3.3 Technology Acceptance Model

This model, proposed by Davis, Bagozzi and Warshal (1989), is widely accepted and applied in Information Studies and Information Technology for predicting acceptance or rejection, adoption and usage of information system. The model provides basis to trace impact of external variables on internal beliefs, attitudes and intentions towards actual system use. Its primary drivers are perceived usefulness and perceived ease of use as they affect an individual's attitude towards using the system (Chen, 2011).

Attitude towards using the system determines behavioral intention to use the system and resulting to actual usage. Perceived usefulness is the “degree to which a person believes that using a particular system would enhance his/her job performance”, and perceived ease of use is the “degree to which a person believes that using a particular system would be free of physical and mental effort” (Davis et al., 1989).

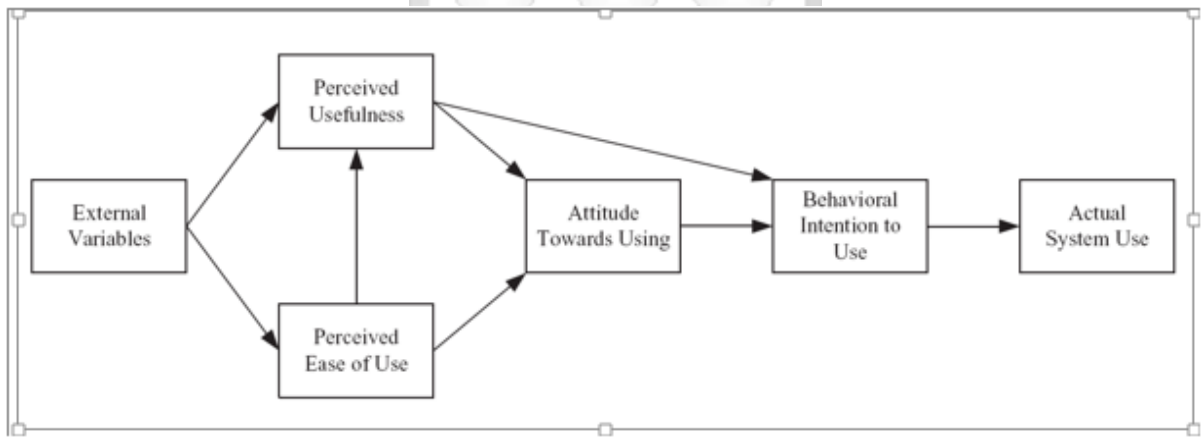


Figure 2.2 Technology Acceptance Model
(Adapted from Davis, Bagozzi & Warshal, 1989)

Davis et al. (1992) extended the model to include perceived enjoyment to reflect intrinsic motivational aspect derived from system usage. Perceived usefulness and perceived ease of use are extrinsic motivational aspect to specific type of system usage.

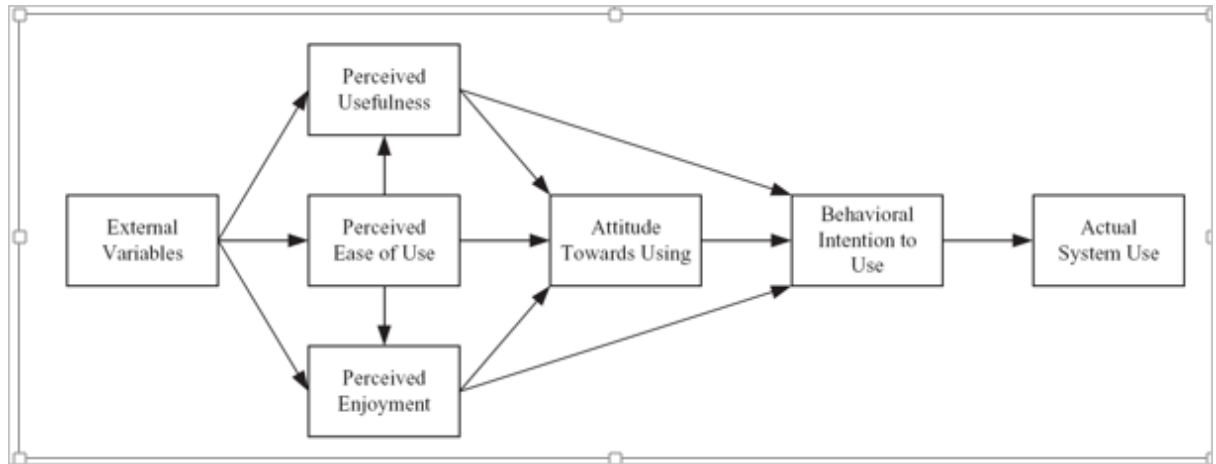


Figure 2.3. Extended Technology Acceptance Model (Adapted from Davis et al., 1992)

External variables that affect user’s acceptance of e-learning system include individual factors such as self-efficacy, that is, one’s belief to have ability to use the system; social factors arising from the influence of friends, workmates, management; and individual learning goals setting (Wang, 2011). This model examines only the individual and technical aspects of e-learning system to influence adoption.

2.3.4 Factors influencing adoption and assimilation of E-learning in SMEs

Adoption and assimilation of e-learning differ in the sense that assimilation refers to the “breadth and depth with which a technology is used in an organization”, its “infusion” that is aimed at realizing its full value of the application (Raymond, Uwizeyemungu, Bergeron & Gauvin, 2012). Usually the decision by SMEs to implement e-learning is influenced by the following three factors: technological; organizational; and environmental factors.

According to Raymond et al.(2012), there are technological factors that may affect the adoption of e-learning. These are Information Technology (IT) assets which refers to the availability of an IT infrastructure like hardware and software, the e-learning technology complexity and the cost of e-learning. For organizational factors Raymond et al. (2012), identifies a variety of factors that may enable IT adoption. This includes organizational innovativeness; top management support and organizational culture. Raymond et al. (2012)

further suggests that SMEs learning culture is determined by the beliefs, attitudes, and behavior of the owner-manager. By doing so they outlined three factors under organizational framework that appear critical for SMEs to adopt and assimilate e-learning which included owner-manager strategic orientation; owner-manager competencies; and employees competencies. Similar sentiments were highlighted by Thong and Yap (1995) in Singapore where they looked at characteristics of CEOs necessary for successful adoption of IT in small business. These were CEO innovativeness, attitude towards IT adoption and IT knowledge. Scupola (2008) pointed out that the main determinants of IT adoption that were related to the top-management competencies were: IT technical; IT vision; IT value; and IT control competencies.

On environmental factors Raymond et al., (2012) stressed that e-learning adoption was determined by: social factors; institutional factors; competitive context; and sector or industry characteristics. Social factors refer to “subjective norms on behavioral intention” , that is, “the person’s perception that salient social referents think he/she should or should not perform the behavior in question” (Cheng, 2011, p. 277). Competitive environments have tendency to push business firms to be innovative in order to cope with five competitive forces such as new entrants to the market, threat of substitute products or services, rivalry among firms, bargaining power of customers and suppliers (Thong & Yap, 1995). Sector or industry characteristics influence information needs of firms. This is because products or services have varying degree on the level of information available. This influences information intensity of products and services thus can contribute to firms adopting IT assets for strategic use (Thong & Yapp, 1995).

2.3.5 Model of outcomes of E-learning adoption on SME performance

Several models linking employees' learning systems utilization and their overall productivity have been discussed at length. But the original model was proposed by DeLone and McLean (1992) that was based on the comprehensive review of the IS success literature. The model identifies six main dimensions that include: Information quality; system quality; system use; user satisfaction; individual impact; and organizational impact. Their interaction is shown in Figure 2.4.

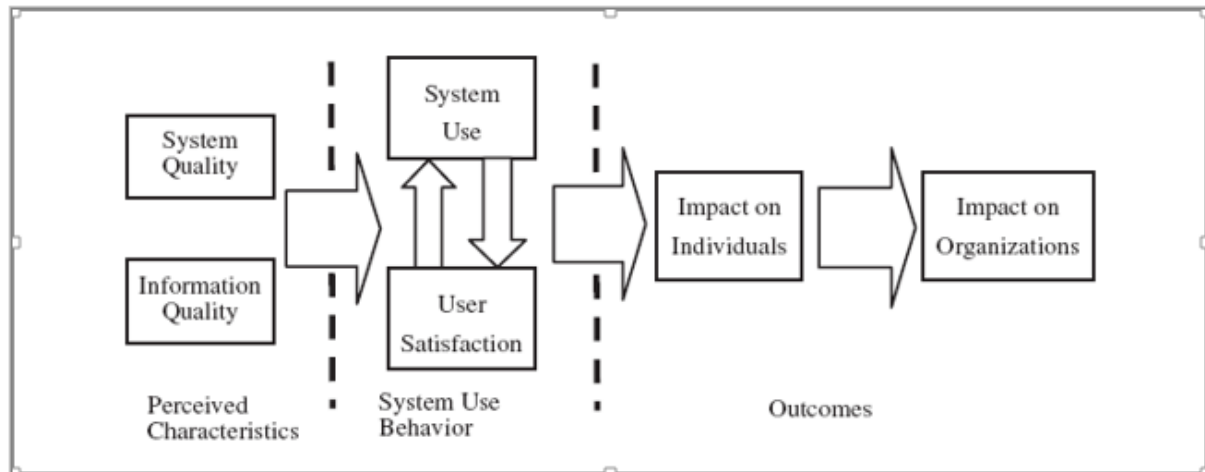


Figure 2.4 The DeLone and McLean's IS success Model (Adapted from DeLone & McLean, 1992)

The model begins by identifying the depended variables as the impact on individual and the organization at large. The model suggests that certain attributes of the information system “arouse the use of the system and satisfaction toward the system, whereby it impacts both individuals and organizations” (Chen, 2010). This ultimately leads for the quest for such system(Chen, 2010). In an e-learning environment, good system quality enhances learning as learners are able to easily navigate their way with ease during the learning process. Good information quality improves user's reliability of the content and quest to use the information to improve skills and knowledge. These two quality aspects affect user's attitude to using the system and satisfaction derived from e-learning system. Positive aspects result to actual usage of the e-learning and satisfaction. The outcome of e-learning will have individual impact to the user as it will have enhanced skills and knowledge transfer. This will be translated to improved efficiency in carrying out assigned duties and roles thus improve productivity to the individual and ultimately to the organization (Chen, 2010).

This model has been updated by several authors over time to reflect the dynamics of the market situation as shown in Figure 2.5. For instance Delone and McLean (2004) modified it leading to a re-specifications based on the e-commerce environment (Chen, 2010).

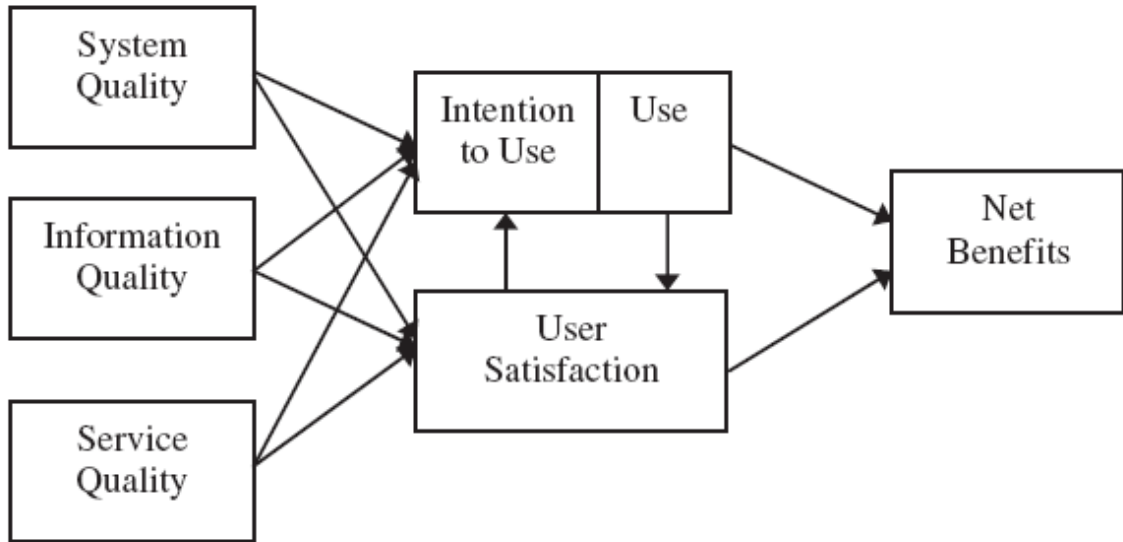


Figure 2.5 The DeLone and McLean’s updated IS success Model (Adapted from DeLone & McLean, 2004)

In this new model, the independent variable is the net benefits as the user’s satisfaction quality was used as a proxy of successful e-learning systems while intention to use measures the user’s attitude that has been shown as one of the main factors determining the adoption of e-learning among companies (Chen, 2010).

2.4 E-learning adoption use cases

Literature on the extent of adoption of e-Learning among SMEs indicates low levels world over. For example, Hamburg and Hall (2008) in their survey of e-learning adoption using the European Network data of 2002 found out that only a seven percent of the SMEs in Europe had used internet over the same period. They found out that SMEs concentrated in hiring new workers rather than training them. The European Network for SME research in a similar survey found that nothing was mentioned on e-learning by the SMES. Beer, Hamburg and Paul (2006) on the Analyzing and Reporting the Implementation of Electronic Learning (ARIEL) project, a European project financed under the European eLearning initiative focusing on SMES and involving Germany, The Netherlands, Hungary, Ireland, Italy showed that research partners were unable to identify SMEs in Europe that were able to meet the EU criteria of e-learning. Similar experience was found by Sambrook (2003) who despite using leads, such as the “Fast

Growth Fifty”, of the 146 SMEs contacted, only six percent of them had some experience with e-learning, while 5 out of the 9 experienced were e-learning providers.

Bielli and Klobas (2003) used Italian SMEs data to investigate the adoption of e-learning. They found little enthusiasm for e-learning among the sampled SMEs that had first-hand experience with this technology. They further suggested that most managers found e-learning products difficult to evaluate and not particularly likely to provide value for the money. Admiraal and Lockhorst (2009), in their study on the relationship between attitude and e-learning among SMEs, measured attitudes using the following seven concepts on five-point scales: technology for communication, technology for work, informal e-learning, formal e-learning, informal learning, formal learning and business networking. They found out that the lowest attitude scores for formal e-learning was a 2.3 and while the highest towards informal e-learning was 3.5 meaning attitude was a very important determinant of the adoption of e-learning among the SMEs (Hankinson, 1994)

Several studies have attempted to investigate the use of technology in improving productivity at the work place. Nunes et al. (2009) observe that most of such studies focus on evaluating the outcomes of e-learning in large companies rather than on SMEs. These studies concentrate on quantitative criteria such as in increase in individual job performance, improvement in enterprises general productivity and increased efficiency in the production process through reduced costs and time.

Hakkarainen (2004) in his study to examine the take-into-use of knowledge management system and deploy of learning at work, focused on making implicit knowledge explicit both for group work and for the purpose of creating “an organizational memory” as well as saving experiential knowledge in order to share it with the whole organization. His system captures processes and procedures from authentic work situations in the paper industry in Belgium. These authentic cases can then be used in seeking to resolve problem situations in the factory, and they can also be stored to organization’s collective memory, which can be further enriched by users facing similar situations.

Using the extended technology acceptance model (TAM) Cheng’s (2011) study in Taiwan on antecedents and consequences for employee acceptance of e-learning system within financial services SMEs identifies four types of determinants: individual, system, social and

network externality factors. The study concludes that all these antecedents “significantly affect user beliefs and perceived usefulness with regard to the e-learning system” (Cheng, 2011).

On the barriers to the implementation of e-learning, Medarova, Bures and Otcenaskova (2012) in their review of studies in Europe (SUPERSTELLA study in London) ,the USA and Australia cluster these barriers around 4 categories: conceptual, organizational, technical and the human factor. These are summarized in Figure 2.6.

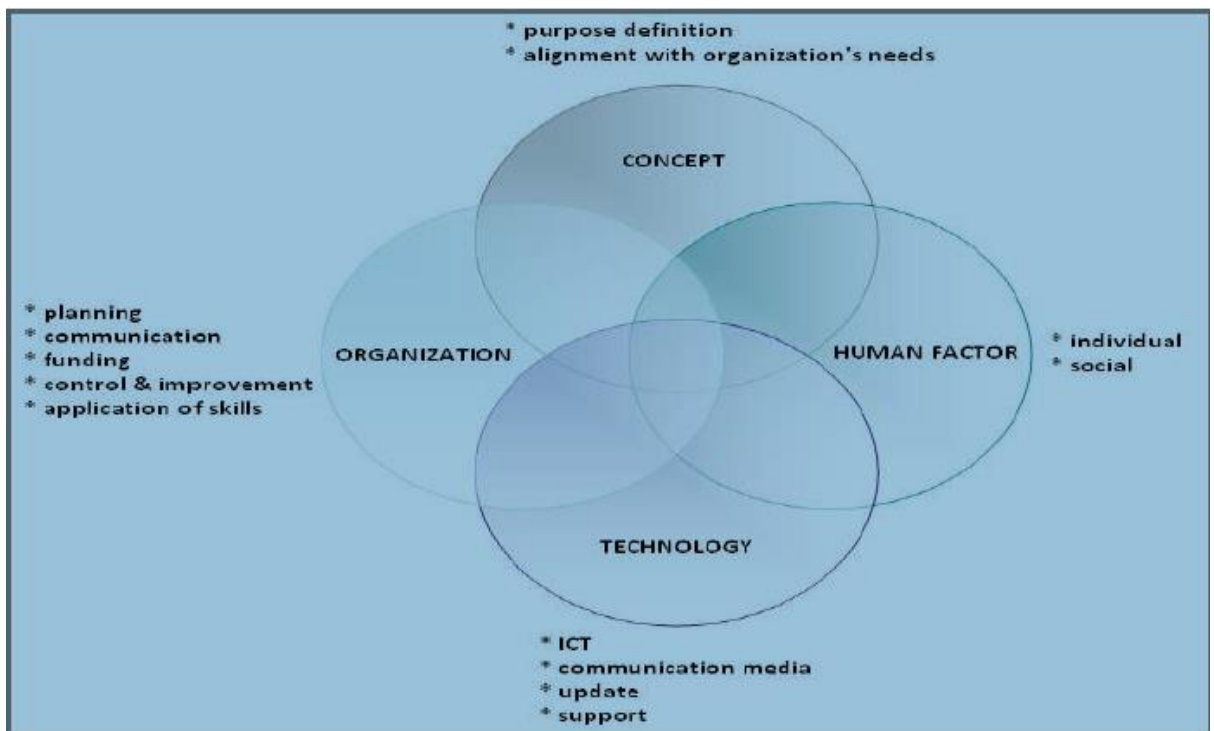


Figure 2.6. Areas of Potential Barriers to Implementation of e-Learning
 (Adapted from Medarova, Bures & Otcenaskova, 2012)

2.5 Summary of literature and study gaps

From the empirical literature reviewed above, it is evident that there is need for empirical studies the adoption of e-learning in SMEs in developing countries. Most of the available studies are in the developed countries though spreading across Asia which signals the first gap that this study seeks to fill.

There has been over reliance on e-learning adoption factors as measured from technology acceptance model which is limiting as it lacks other dimensions of institutional,

environmental and pedagogical factors. SMEs face problems such as technology, lack of knowledge, organizational culture in implementing sustainable e-learning technology.

The framework provided by Raymond et al. (2012) is however theoretical but it provides a frame of reference to managers contemplating an e-learning program by highlighting key adoption and assimilation factors for the specific context of SMEs.

With regard to the status of adoption of e-learning by SMEs, it is evident that the available literature indicates limited adoption in Europe though there have been initiatives like SIMPEL and Ariel to address the gaps. There is scanty literature on the extent of success of e-learning adoption on workforce development in SMEs. A framework to identify the challenges facing e-learning adoption for SMEs has been suggested but there is scanty literature to provide context-based empirical evidence.

There is therefore need for an empirical study that addresses these gaps by investigating the extent of adoption of e-Learning by SMEs in Kenya, identifying the components of a framework characterizing the existing adoption of e-Learning by SMEs in Kenya, and ultimately propose a model to enhance successful e-learning adoption for the enhanced productivity of SMEs in Kenya. These provided the rationale for this study.

2.6 Conceptual framework

Based on literature review, this study develops a model that links the dependent variable (e-learning adoption) and the independent variables.

Similar to an architectural drawing, the conceptual framework outlines the building block of structures SMEs need to put in place to build successful E-learning that yield improvement in productivity and foster innovation. E-learning involves use of computer network technology to deliver information and instructions to individuals. It is crucial for any SME to plan and put structures necessary to enhance successful adoption for e-learning. The building blocks are e-readiness that focuses on three main areas: organizational, technical and environmental (Raymond et al., 2012).

At the organizational level, top management support is essential to build an environment that embraces and support e-learning use as a means to deliver training to staff. Employees' IT competencies are crucial for organizational readiness to adopt e-learning and to also be part of informal communities of interaction around e-learning. Technological factors entail having the right hardware, software, communication links and learning management

system that support pedagogy for learners. Environmental support is necessary from content providers as most SMEs will not be able to develop content for e-learning .It is also necessary for SMEs to be part of a network or community of e-learning. Finally, government support through incentives to adopt ICT and e-learning is also key. The outcome of e-learning to any SME is that it will promote employee competencies to enhance increased efficiency in job performance and innovation. The conceptual framework is shown in Figure 2.7.

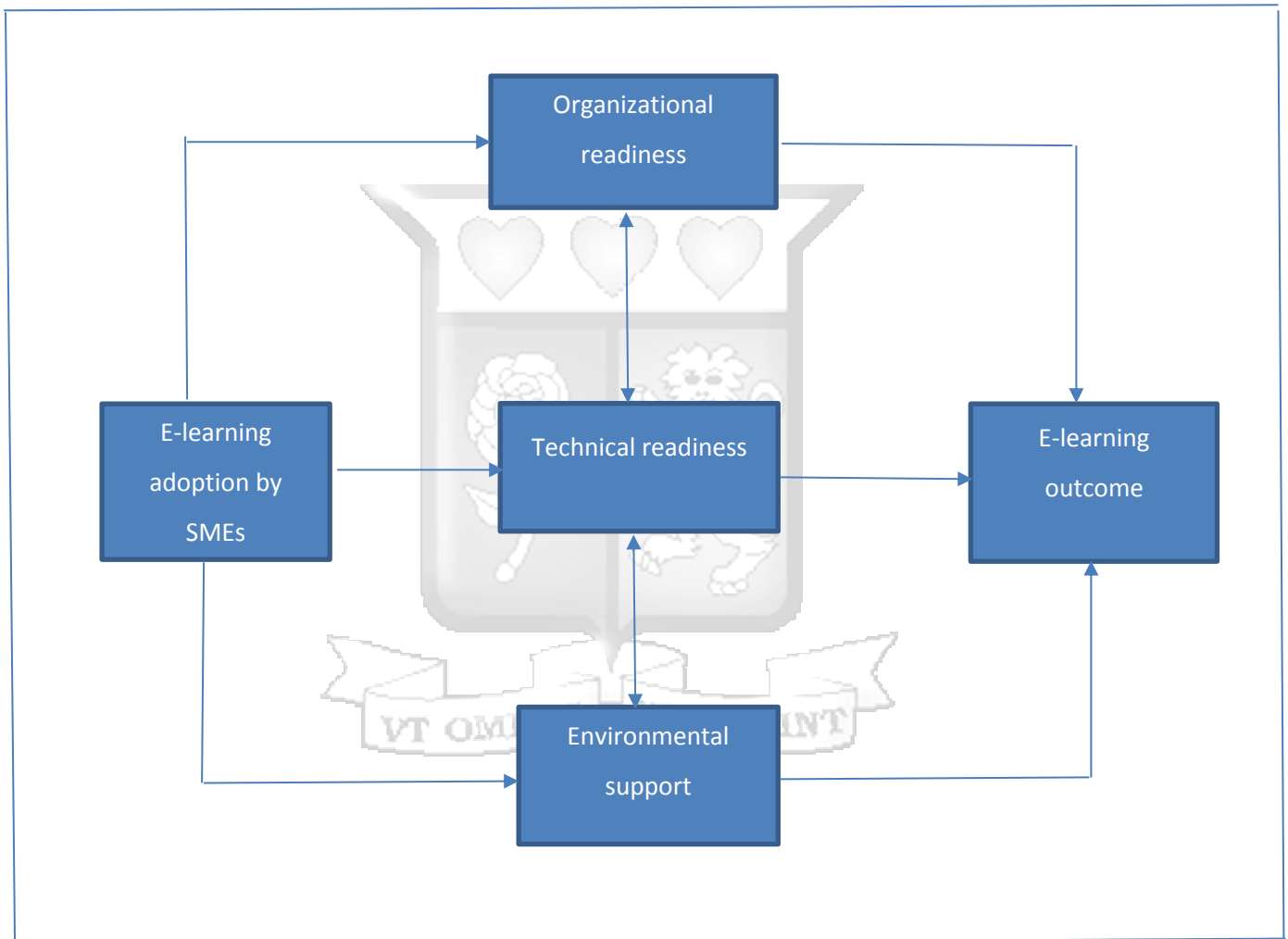


Figure 2.7 Conceptual Framework

Chapter 3: Research Methodology

3.1 Introduction

This chapter gives a detailed outline of how the study was conducted. It covers the research design, location of the study, study population and sample, research instruments, procedures for data collection and analysis, and ethical considerations.

3.2 Research Design

The study adopted a descriptive research design. Since the interest of this study is to depict the current situation on the extent of adoption of e-learning in SMEs in Kenya and the outcomes of that adoption on their performance, a descriptive research design is considered most appropriate. This entailed conducting a survey of SMEs in Kenya to find out the extent to which they have adopted e-learning as a strategy for building employee productive capacities and as a tool for workplace learning. Questionnaires were administered to HR Managers and employees for firms that have deployed e-learning.

3.3 Location of the Study

The researcher conducted the survey among top one hundred SME firms in the year 2015-16 from a survey done annually by KPMG Kenya and Nation Media Group located in Nairobi and its environs because of the relatively high concentration of these SMEs with ICT platforms. Further as top one hundred SME firms it was necessary to find out if adoption of e-learning was a determinant factor for their success.

3.4 Target Population

The researcher targeted one hundred HR managers from the 2015-2016 Top 100 SMEs obtained a survey done annually by KPMG Kenya and Nation Media Group and one hundred employees from the firms that had implemented e-learning in Kenya. The HR Managers were in the best position to provide information on the extent of adoption of e-learning in their establishments, as well as on the outcomes of the learning innovation on organizational productivity and the challenges faced in adoption of e-learning. Employees in the establishments were also be targeted so as to provide information on the outcomes of e-learning on self-improvement and productivity.

3.5 Sampling Techniques and Sample Size

The study used simple random sampling to select fifty percent of the HR managers and employees from the sampling frame of 100 SMEs. This was considered an appropriate number for descriptive surveys (Yamane, 1967:886). Simple random sampling was used to select the 50 HR Managers from the sampling frame. Purposive sampling method was used to select fifty employees from firms that had implemented e-learning.

The sample size was determined by how many people were to be interviewed to get results that reflect target population as precisely as possible. Sample size depends on confidence level and the population (Yamane, 1967).

The confidence interval is the margin of error expected in the sample. Thus using confidence level of 90% and the sample size from the list of top 100 SMEs in 2015-2016 is fifty. The formula is as follows

$$n = \frac{N}{1+Ne^2} = \frac{100}{1+100*0.1^2} = \frac{100}{1+100*0.01} = \frac{100}{1+1}$$

Where n is the desired sample size (50)

N is the population size (100)

And e is the margin of error (0.1)

3.6 Research Instruments

The study used two questionnaires: the SME HR Manager Questionnaire and the SME Employee Questionnaire. Both instruments contained items soliciting quantitative and qualitative information. The SME HR Manager Questionnaire was made up of 10 sections. Part A and B provided information on personal and company characteristics. Part C focused on specific manager attributes on e-learning such as experience with IT, innovative orientation, and attitude on usefulness of e-learning for organization. Part D focused on company e-learning framework, benefits from deployment. Part E focused on barriers to adoption of e-learning. The SME Employee Questionnaire was divided into three parts. Part A covered general characteristics. Part B focused on aspects of adoption of e-learning such as frequency of use, technological aspects of the e-learning system such as information quality, system quality, perceived usefulness of the e-learning system and the employee's satisfaction with the e-learning system and on the beneficial consequences of the use of e-learning system on

individual learning and productivity on the job. Part C and reasons for use. The quantitative information was on the extent of adoption of e-learning, its impact on the organization and the employee, and other firm characteristics. Qualitative information was collected on factors that account for the observed trends in adoption of e-learning and on the impact of e-learning.

3.7 Validity

The content validity of the research instruments was ascertained by consulting lecturers in IS on the extent to which the questionnaire items represented typical topics and themes in the content universe in the area of study (Gay, Mills & Airasian, 2009:157).

3.8 Reliability

In order to test whether the questionnaire generated consistent measurements, a test-retest pilot study was conducted in two SMEs that were not included in the final study. The reliability of the two tests was checked through the Pearson Product Moment correlation technique. A value of 0.81 was obtained and it was considered high enough.

3.9 Procedures for data collection

The researcher sought consent to conduct the study from Strathmore Graduate School and obtained a letter of introduction to the respondents. The researcher visited the SMEs and sought the consent of the HR Managers to conduct the study in their enterprises. The researcher administered the questionnaires himself so that any necessary clarifications could be provided.

3.10 Procedures for data analysis

The researcher collected the questionnaires upon completion by the respondents. They were scrutinized for level of completion and consistency of information provided. Then the researcher coded the items on a codebook to guide keying in on a spreadsheet ready for analysis. The researcher then analyzed the data using descriptive statistics software in the SPSS Version 2.0. The findings were presented in the form of frequencies and percentages in relevant graphics such as pie charts, bar graphs, among others. Qualitative data from the open-ended items in the questionnaires was analyzed through themes.

3.11 Ethical considerations

The researcher obtained consent to conduct the study from the University, the HR Managers and employees in the study SMEs. The researcher also assured the respondents of confidentiality of the information that they provided. This is found in the letter from the

University and the researcher to the respondents seeking consent to collect information from them and containing these assurances (See Appendix A).



Chapter 4: Presentation of Research Findings

4.1. Introduction

This chapter presents the data obtained from the field study and an analysis of the information within the framework of the study's central purpose, objectives and conceptual model. To put this in perspective, the central purpose was to examine the extent of adoption of e-learning in SMEs in Kenya so as to assess the impact of the adoption on employee productivity and organizational performance, to determine the factors accounting for the observed impact, and to propose a framework to enhance successful e-learning adoption. The specific objectives that guided the research study are presented below:

- i. To identify factors influencing e-learning adoption by SMEs in Kenya.
- ii. To identify challenges facing e-learning adoption by SMEs in Kenya.
- iii. To propose a framework that will enhance successful e-learning adoption by SMEs in Kenya.
- iv. To validate the proposed framework.

A total of 56 HRM Questionnaires were administered. A total of 52 were returned and there was no response from 4 HR Managers, giving a response rate of 92 %. Further, from the 10 SMEs that reported as having using ICT for e-learning, a total of 60 Employee Questionnaires were administered. A total of 51 questionnaires were returned, generating a response rate of 85 %. After scrutinizing the returned questionnaires for completion and usability for analysis, a total of 50 HRM Questionnaires and 46 Employee Questionnaires were used for data analysis.

4.2 Demographic Characteristics of SMEs, Managers and Users

The following section presents the key demographic features of the study firms and respondents among the HR Managers and employees.

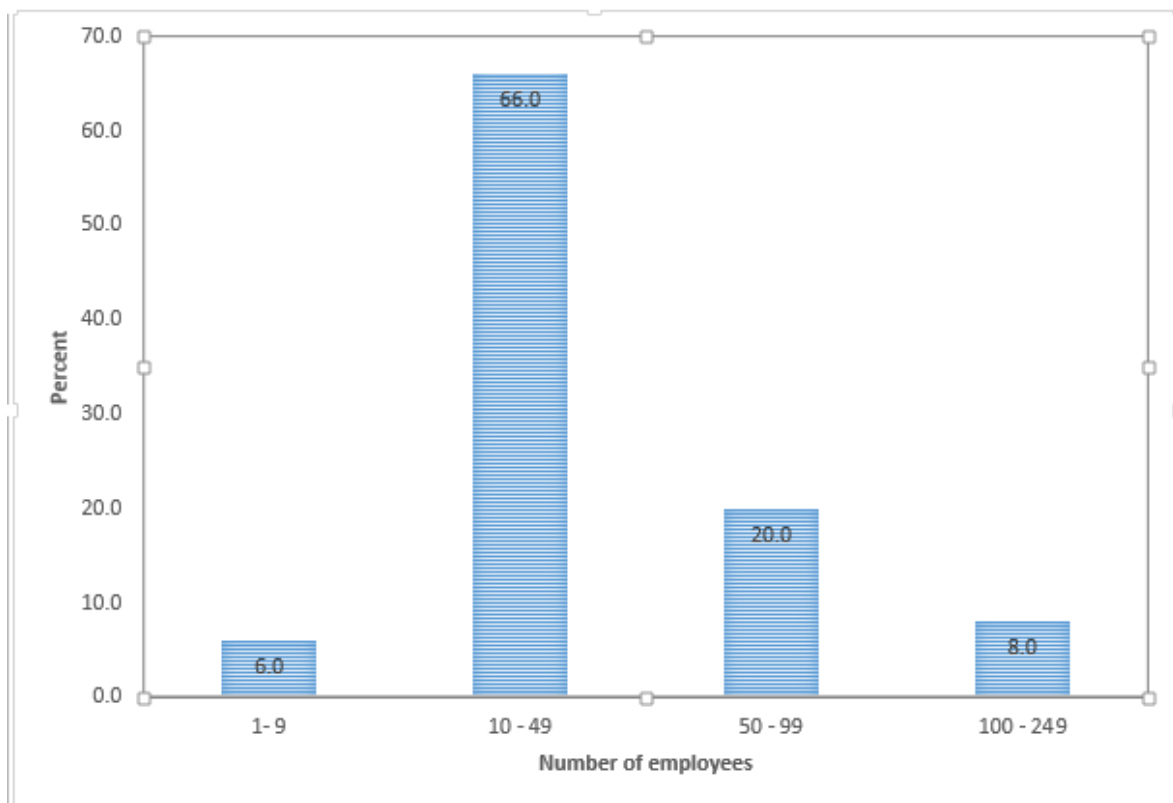
4.2.1 SME Firms

This section describes the following characteristics of the study respondent firms: the number of employees, the business sector, the number of branches, annual turn-over estimates, and the use of ICT.

Number of employees

Majority of the companies 66% had between 10 to 49 employees, 20% had 50-99 employees, 8% had 100-249 employees, and 6% companies had less than ten employees.

Figure 4.1 presents these findings.



VT OMNES VNVM SINT
Figure 4.1 SME firms employee distribution

Business Sector

Majority of the companies 32% said that they were in the ICT sector, 24% in manufacturing sector 12% in Wholesale & Retail sector while companies said that they are in transport sector.

Table 4.1 Business Sector

Business Sector	Frequency	Percent
ICT	16	32
Manufacturing	12	24
Wholesale & Retail	6	12
Transport	5	10
Hospitality	3	6
Healthcare	3	6
Financial services	3	6
Energy	2	4
Total	50	100.0

Number of branches

In the respondent firms, majority of the companies 46% had only one branch, 26% had 3 branches, 22% had 2 branches and 6% has more than 3 branches.

Table 4.2 Branch distribution

Branches	Frequency	Percent
1	23	46
2	11	22
3	13	26
> 3	3	6
Total	50	100

Annual turnover estimate

As Figure 4.6 illustrates, slightly more than half of the respondents 29 (58 %) had a turnover of Kshs101 to 500 million, 15(30%) had a turnover of Kshs 10 to 100 million while 6(12%) had a turnover of over Kshs 500 million.

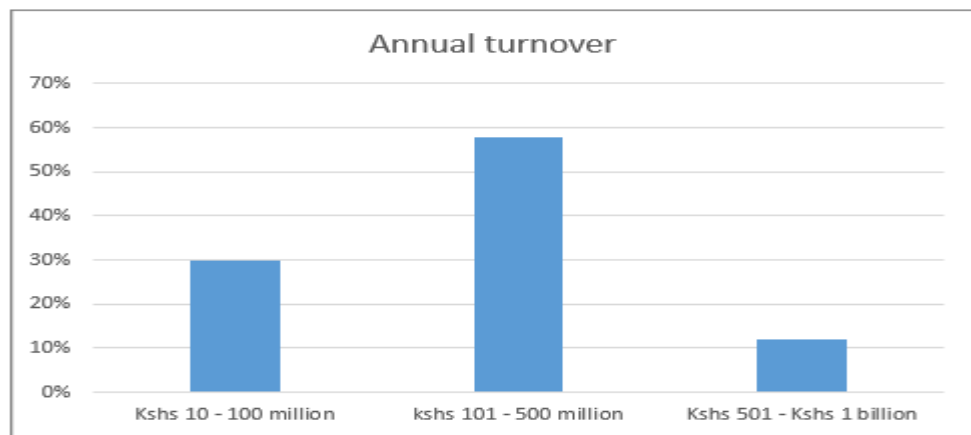


Figure 4.2: Estimated annual turnover

Use of ICT in SMEs

In order to establish whether the respondent SME firms embraced ICT platforms in their establishments, managers were asked whether their firms used ICT. Their responses are shown in Figure 4.3.

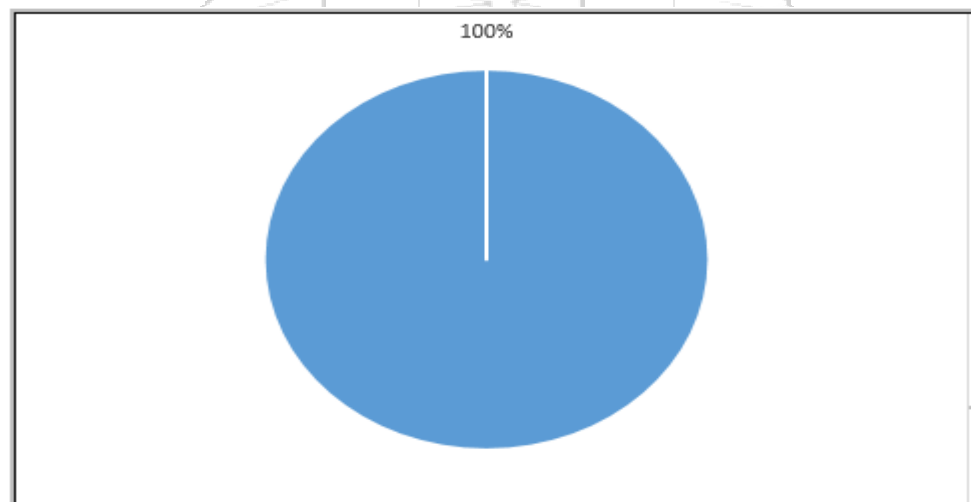


Figure 4.3 Use of ICT by SME firms

All the firms had adopted use of ICT.

To establish the use to which the ICT platform was put to, respondents were asked to indicate what the firm used ICT for from a list of options. Their responses are shown in Table 4.3.

Table 4.3 Use of ICT by SME firms

Use of ICT	N	Percent
Email	50	100%
Internet (website)	48	96%
Stock control	22	46%
Telephone	50	100%
Customer relationship management	18	36%
Enterprise resource management	15	30%
Human resources management	12	24%
E-learning	10	20%

All the SMEs that had ICT platforms, that is, the 100% of firms said that they use ICT for email and telephone, followed closely by internet (website) 96 %, while 46 % said they use ICT for stock control. It is interesting to note that only 20 % used ICT for e-learning, and this is among the least utilized use of the ICT platform. This also indicates a low level of adoption of e-learning among the study firms.

4.2.2 Demographic characteristics of SME Managers

The following section describes the following characteristics of SME managers: age, gender, level of education and position in the company,

Gender

With regard to the gender of the SME managers, there was an almost equal distribution of both male 24(48 %) and female 26(52 %) as shown in Figure 4.4 below.

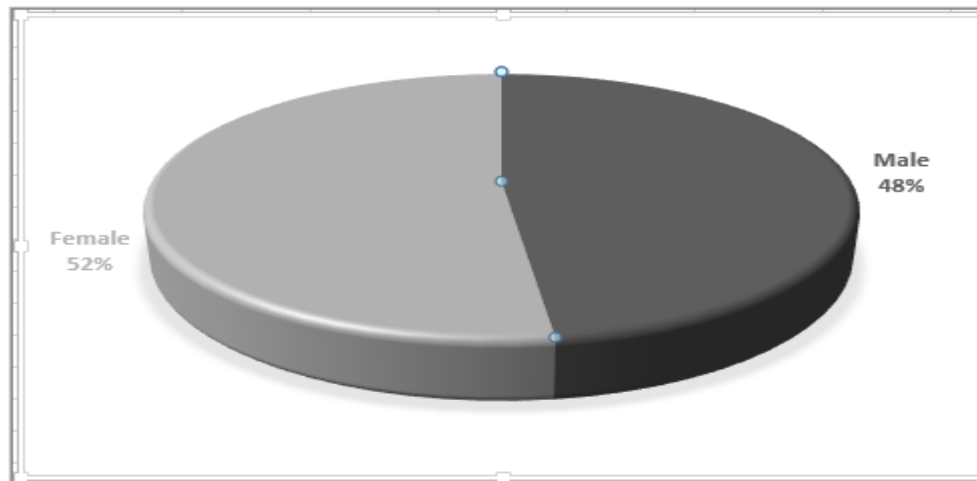


Figure 4.4 Gender of the SME Managers

Age

Slightly below half 24(48 %) of the SME Managers were aged between 21-30 years, 18(36 %) were aged between 31-40 years while 8(16 %) were aged between 41-50 years. None of the respondents were over 50 years old.

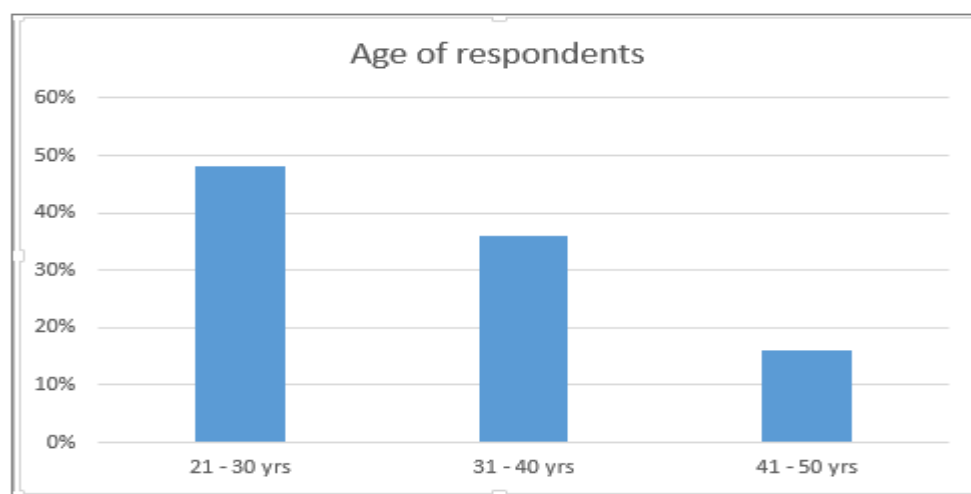


Figure 4.5 Age distribution of SME Managers

Level of Education

Among the SME managers, about forty percent 20 (40 %) of the respondents had post graduate qualifications as their highest level of education. Another 19 (38%) of them were undergraduates, 10(20%) were diploma holders while one human resources manager had a doctorate (2%) degree. This is presented in Figure 4.6.

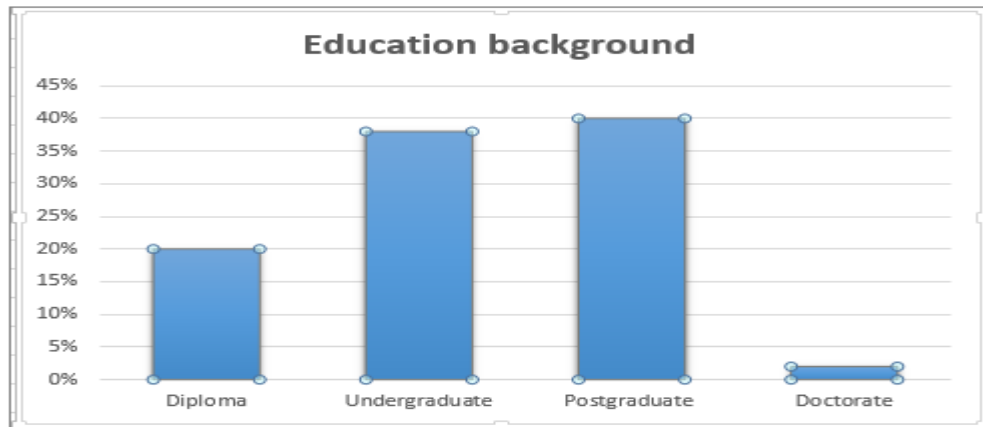


Figure 4.6: Highest level of education among SME managers

Position in the Company

Over half of the respondent managers said that they held the position of Human Resource Manager and/or General Manager/Chief executive. Table 4.4 shows the distribution of positions held in the respondent SME firms.

Table 4.4 Position of SME Manager in the company

Position in the company	Frequency	Percent
General Manager/HRM	22	44%
Administration Manager	5	10%
Business Development Manager	4	8%
Chief Accountant	7	14%
Finance and administration manager	5	10%
Sales Executive Manager	5	10%
Travel Consultant	2	4%
Total	50	100%

4.2.3 Demographic characteristics of Employees in SMEs with E-Learning

Finally, this section characterizes the employees of SMEs in the respondent firms with regards to their gender, age, level of education, and position in the company.

Gender

With reference to the age of the users of e-learning 25(54.3%) were males compared to 21(45.7% of their female counterpart. This is presented in Figure 4.7.

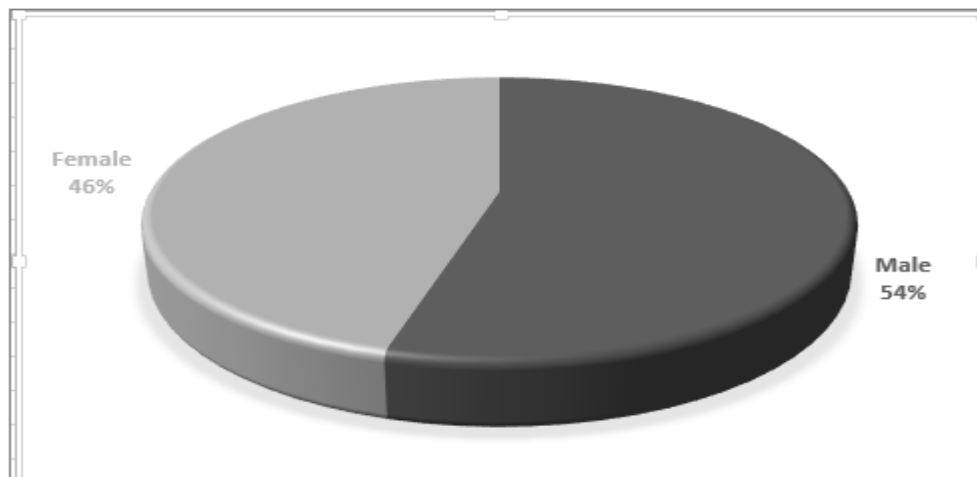


Figure 4.7: Gender of the e-learning users

Age

Among the employees who said they use e-learning, a majority 34(73.9%) were aged between 21-30 years, 9(19.5%) were aged between 31-40 years while 3(6.5%) were aged between 41-50 years. This is summarized in Figure 4.8.

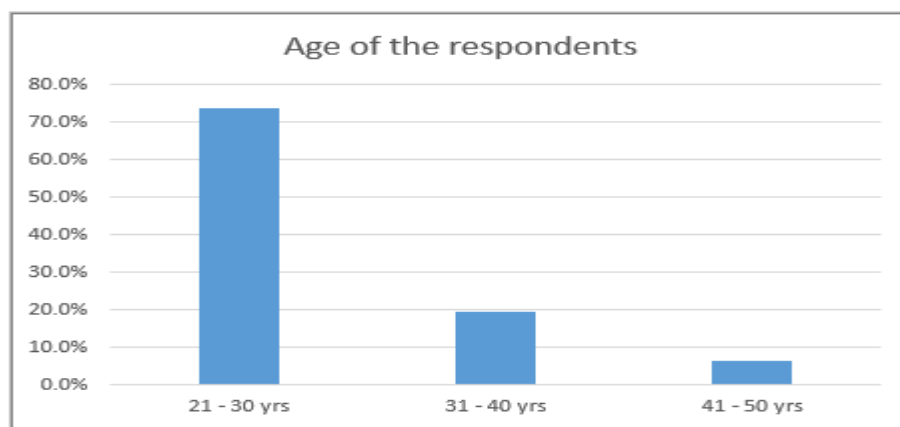


Figure 4.8: Age profile of the e-learning users

It is significant to point out that among the SME employees in firms that had adopted e-learning, the majority (74%) were in the 21-30 years range, indicating a youthful trend in adoption of e-learning. This is important because these respondents fall within what is referred to as the ‘digital natives’.

Level of Education

Of the e-learning users, 20 (43.4%) had undergraduate as their highest level of education, 14 (30.4%) were diploma holders, 7 (15.2 %) had post graduate as their highest level of education while 5(10.8 %) were certificate holders. This is shown in Figure 4.9.

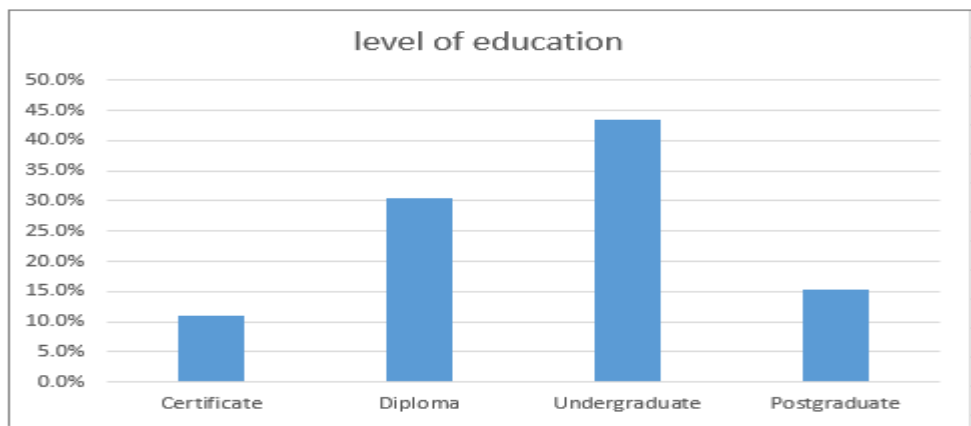


Figure 4.9: Education background of e-learning users

From the Figure, it is evident that the majority of employees had some advanced level of formal education beyond the secondary level. This suggests a relationship between level of education and inclination to continue learning beyond formal schooling, though further research would be required to investigate this.

Among the e-learning users, the distribution of their positions in the SME firms is illustrated in the Table 4.5.

Table 4.5 Position of e-learning users in SME firms

Position	Frequency	Percent
Technician	6	13%
Sales and marketing executive	3	6.5%
System Implementer	6	13%
Administrator	2	4.3%
Business Development Manager	2	4.3%
HR and Admin manager	2	4.3%
Sales manager	3	6.5%
Accountant	3	6.5%
Ass ICT manger	2	4.3%
CFO	2	4.3%
IT Engineer	4	8.7%
Liaison officer	5	10.9%
Marketing	3	6.5%
Technical Support Assist	3	6.5%
Total	46	100%

As the table indicates, the users of e-learning occupy varied positions in the study SMEs. This demonstrates that learning needs are spread across the organizations and are not restricted to technical levels in the firms such as among technicians.

4.3. Extent of E-learning adoption by SMEs

The first objective of the study was to determine the status of adoption of e-learning among the respondent firms. This was relevant because it would demonstrate the extent to which e-learning as a learning tool is prevalent. In order to establish the extent, five dimensions were explored: duration in the use of e-learning, the reasons for adoption, the influence of the SME manager characteristics, the information intensity of the study SMEs, and the entrenchment of e-learning practices and culture within the SME through an e-learning policy. The first section focused on the SME managers while the second addressed the SME employees in the respondent firms.

Adoption aspects of SME Firms

In order to determine the extent of use of e-learning in the respondent firms, it was necessary to find out how long the SME firm had adopted e-learning. Respondent managers were asked to indicate the duration of adoption. Their responses are shown in Figure 4.10.

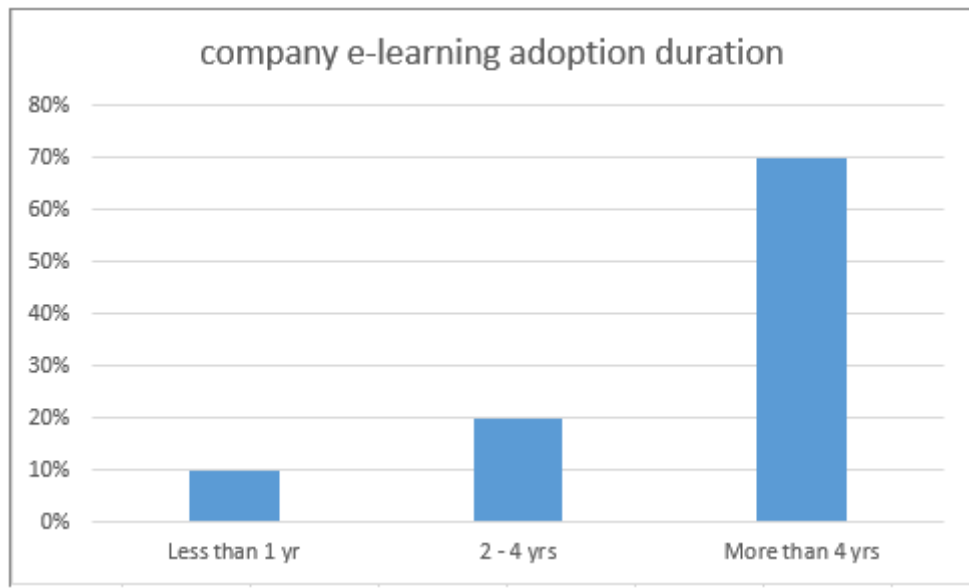


Figure 4.10: Duration of E-learning Adoption

Majority of the respondents 7(70 %) reported that their company had adopted e-learning for more than four years followed by 2(20 %) who said that their companies had adopted e-learning for 2-4 years while only one respondent (10 %) said that his company had adopted e-learning for less than one year.

Further, it was also necessary for SME managers to indicate the reasons why they adopted e-learning. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. The responses are presented in Table 4.6.

Table 4.6 Reasons for adopting E-Learning

Adoption of E-Learning	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD (1)	Perception
E-learning increases productivity of employees	10	4.18	(44.7%)	(36.8%)	(13.2%)	(2.6%)	(2.6%)	Positive
I have seen what other companies have achieved with e-learning	10	3.89	(24.3%)	(48.6%)	(21.6%)	(2.7%)	(2.7%)	Positive
Using E-learning is a good idea	10	4.24	(50.0%)	(36.8%)	(5.3%)	(2.6%)	(5.3%)	Positive
I feel that using e-learning is pleasant	10	4.00	(32.4%)	(45.9%)	(13.5%)	(5.4%)	(2.6%)	Positive
In my opinion, it would be desirable to use e-learning	10	4.14	(36.8%)	(45.9%)	(10.8%)	(2.7%)	(2.7%)	Positive

It was clear that most companies had positively adopted E-learning basing on the response given in the under mentioned statements where all had a mean greater than 3.89 indicating that they positively felt that e-learning increases productivity of employees, have seen what other companies had achieved with e-learning, that use of e-learning was a good idea, saying e-learning was pleasant and that it was desirable to use e-learning.

In order to find out if these factors accounting for the adoption of e-Learning had a bearing on the SME manager’s characteristics, the researcher asked questions on the innovativeness and IT competencies of the manager. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. The findings are presented in Table 4.7.

Table 4.7 SME Manager Innovation

Personality	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
I have original ideas	10	3.86	29.7%	43.2%	18.9%	-	8.1%)	Positive
I create something new than improve something existing	10	3.46	10.8%	(48.6%)	24.3%)	8.1%)	8.1%)	Positive
I often risk doing things differently	10	3.59	18.9%	(40.5%)	(29.7%)	2.7%)	8.1%)	Positive

With a mean of 3.86 it is clear that majority of the respondents positively felt that they had original ideas, it was also observed that majority of them positively felt that they can create something new than improve something existing, mean=3.46. Finally majority of the respondents positive said that they often risk doing things differently.

Further, the competencies of the SME manager on the use of IT has a bearing on readiness to adopt e-Learning. The study sought to find out the level of experience in IT of the manager. This was determined through their responses on experience with the use of computers and on internet use. Tables 4.8 presents the findings on experience with the use of a computer.

Table 4.8 SME Manager Computer experience

Computer experience	N	Percent
Attended computer course(s)	7	70%
Use a computer at home	10	100%
Use a computer at work	10	100%
Have formal qualifications in the use and operation of a computer	7	70%

All the respondents reported that they use computer at work place and also at home. Also, 70% of the respondents said that they had experience in computer because they had attended a computer course.

On the SME manager's experience with the use of internet, Table 4.9 presents the findings.

Table 4.9 SME Manager Internet Experience

Internet experience	N	Percent
I use internet at home	10	100%
I use internet work	10	100%

All the SME managers use internet at work and also at home.

Finally, the information intensity of the SME was considered an important determinant of adoption of e-learning by the SME. The SME manager was asked to indicate the extent to which the SME was dependent on up-to-date, reliable, relevant, and accurate as fast as it was needed. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. Their responses are presented in Table 4.10.

Table 4:10 SME Information Intensity

Statements	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
My company is dependent on up to date information	10	4.43	(60.5%)	(27.0%)	(5.4%)	(2.7%)	(2.7%)	Positive
It is very important for my company to have access to reliable, relevant and accurate information	10	4.68	(76.3%)	-	-	-	(2.6%)	Positive
It is very important for my company to access information fast whenever we need the information	10	4.73	(83.8%)	(10.8%)	(2.7%)	-	(2.7%)	Positive

Majority of the respondents positively felt that their company was dependent on up to date information mean=4.43, on the importance of the company to have access to reliable, relevant and accurate information, majority of the respondents positively felt that it was important mean=4.68. Finally majority of the respondents positively felt that it was very important for their companies to access information fast whenever they need it mean=4.73.

In order to examine the extent to which e-learning has been incorporated as part of the organization, the SME managers were asked whether their SMEs had an e-learning policy and the scope of such a policy if present. The responses on the existence of a policy are presented in Figure 4.11.

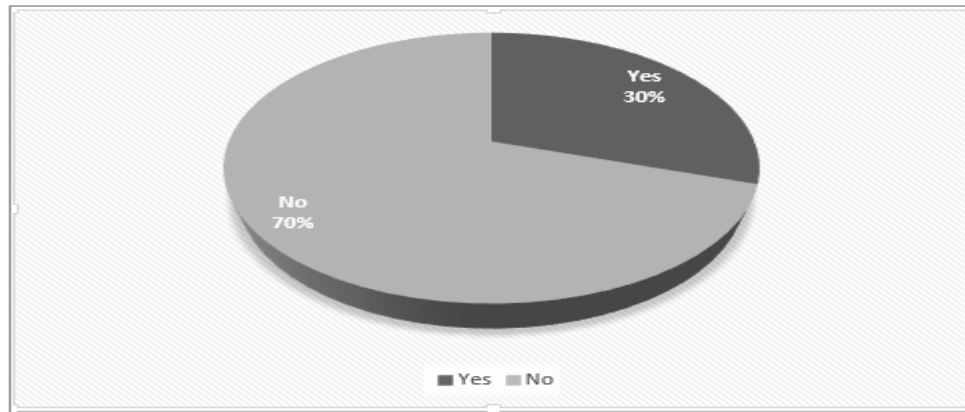


Figure 4.11: E-learning Policy

Majority of the respondents 7(70%) said that they don't have an e-learning policy in place whereas 3 (30%) who said that they had one.

On the scope of the e-learning, the responses of the SME managers are presented in Table 4:11

Table 4:11 Scope of E-learning

Dimension of e-learning	N(10)	Percent
Technical modules specific to our sector	8	80%
Customer service	7	70%
Finance	5	50%
Sales & marketing	6	60%
On-boarding new employees	2	20%
Project management	4	40%

The majority of the respondents (80%) said that the scope of the e-learning covered technical modules specific to their sector; customer service (70%), sales and marketing (60%), finance (50%), project management (40%) and on-boarding new employees (20%). Also, the firms were being provided e-learning content by external business partners.

Adoption aspects of E-Learning Users

It was considered necessary to find out if the employees used the e-learning platform, with what frequency, and for what purpose. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. Table 4.12 shows their responses.

Table 4:12 Employee E-learning use

E-learning use	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
I frequently use the e-learning system	46	3.72	(20.0%)	(40.0%)	32.0%)	(8.0%)	-	Positive
I use many functions of the e-learning system	46	4.00	(26.9%)	(48.0%)	(20.0%)	4.0%)	-	Positive
I depend on the e-learning system to improve my knowledge and skills	46	3.62	(7.7%)	(57.7%)	(23.1%)	(11.5%)	-	Positive

Majority of the respondents agreed that they frequently use the e-learning system (mean=3.72), that they use many functions of the e-learning system (mean=4.00) and that they depend on the e-learning system to improve my knowledge and skills (mean=3.62).

On the basis of the above finding on the frequency of use of e-learning, it was then necessary find out why the employee respondents adopted e-learning. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. Their responses are provided in Table 4.13

Table 4.13 Employee adoption factors

Reasons for adopting e-learning	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
Company encouraged me to use e-learning	46	3.67	(33.3%)	(29.2%)	(12.5%)	(20.8%)	(4.2%)	Positive
On-job training requires me to use e-learning	46	3.71	(29.2%)	(29.2%)	(29.2%)	(8.3%)	(4.2%)	Positive
My training courses can be accomplished only when using e-learning	46	3.32	(12.0%)	(36.0%)	(32.0%)	(12.0%)	(8.0%)	Positive
Learning interactions with the company, friends and other businesses force me to use e-learning	46	3.73	30.8%)	(30.8%)	(23.1%)	(11.5%)	(3.8%)	Positive
I have seen what others do using e-learning	46	4.00	(19.2%)	(64.0%)	(12.0%)	(4.0%)	-	Positive
People in my social network (friends, family and workmates) use e-learning	46	3.65	(15.4%)	(42.3%)	(34.6%)	(7.7%)	-	Positive
E-learning is very visible in my social network	46	3.77	(23.1%)	(38.5%)	(30.8%)	(7.7%)	-	Positive
People around me who use e-learning have more prestige than those who do not	46	3.44	(32.0%)	(12.0%)	(28.0%)	(24.0%)	-	Positive
People around me who use e-learning have a high profile	46	3.31	(26.9%)	(19.2%)	(19.2%)	(26.9%)	-	Positive
Using e-learning is a status symbol for people around me	46	2.96	(7.7%)	(26.9%)	(30.8%)	(23.1%)	(11.5%)	Positive
Using e-learning is a good idea	46	4.42	(50.0%)	(42.3%)	(7.7%)	-	-	Positive
I feel that using e-learning is pleasant	46	4.27	(38.5%)	(50.0%)	(11.5%)	-	-	Positive
In my view using e-learning is a wise ideas	46	4.42	(53.8%)	(38.5%)	3.8%)	3.8%)	-	Positive
I would continue to use e-learning for my learning need	46	4.23	(26.9%)	(69.2%)	1(3.8%)	-	-	Positive
I would continue to use e-learning for handling my on-job training in the future	46	4.00	6(23.1%)	15(57.7%)	4(15.4%)	1(3.8%)	-	Positive
I would continue to see myself using e-learning to facilitate my on job training	46	4.04	6(23.1%)	17(65.4%)	2(7.7%)	-	3.8%)	Positive

Majority of the respondents had a positive perception on all the reasons for using e-learning as indicated in Table 4.13.

Further, it was also deemed necessary to test the perceived usefulness of e-learning. The respondents were asked to provide their perceptions on whether the e-learning system enhance their learning and work competencies and efficiency, and therefore productivity. Respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. Their response are presented in Table 4.14.

Table 4.14 Employee perceived E-learning usefulness

Perceived usefulness	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
Using the e-learning system enhances my work efficiency	46	4.00	(20.0%)	(64.0%)	(12.0%)	(4.0%)	-	Positive
Using the e-learning system improves my job outcome and learning efficiency	46	4.00	(29.2%)	(50.0%)	(12.5%)	(8.3%)	-	Positive
Using the e-learning system enhances my competencies	46	4.12	(30.8%)	(50.0%)	(19.2%)	-	-	Positive
Using the e-learning system improves my productivity	46	4.24	(48.0%)	28.0%	(24.0%)	-	-	Positive
Using the e-learning system makes work become easy	46	4.32	(40.0%)	(52.0%)	(8.0%)	-	-	Positive

A majority of them had a positive perception towards them. A vast majority of the e-learning users positively felt that using e-learning system enhanced efficiency of their work (mean=4.00), that using e-learning system improves their job outcome and learning efficiency (mean=4.00) and that use of e-learning system enhances their competencies mean=4.12). Further, majority of the e-learning users positively felt use of e-learning system improves their productivity and that use of e-learning system made their work easy.

These statements were supported by their responses on the levels of satisfaction after using the e-learning system. These responses are provided in Table 4:15.

Table 4:15 Employee E-learning user satisfaction

User satisfaction	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
I am satisfied with the sufficient information of the e-learning system as it meets my work needs	46	4.04	(32.0%)	(44.0%)	(20.0%)	(4.0%)	-	Positive
I am satisfied with the efficiency of the e-learning system	46	3.80	(12.0%)	(60.0%)	(24.0%)	(4.0%)	-	Positive
I am satisfied with the effectiveness of the e-learning system	46	3.92	(19.2%)	(57.7%)	(19.2%)	(3.8%)	-	positive

The results in table 4.15 shows that majority of the e-learning users were satisfied by the e-learning system they were using in their company especially in terms of sufficient information, efficiency of the e-learning system and its effectiveness.

The above responses on the user perceived ease of use and satisfaction are proxy indicators of the system and information quality. To access Information Quality respondents were presented with 5 items to respond to a 5-Point scale ranging from Strongly Agree (weight of 5) to Strongly Disagree (weight of 1). The mean response rate was then computed. The responses of the users on the information quality are presented in Table 4.16:

Table 4.16 E-learning system Information Quality

Information Quality	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
The e-learning system provides correct and accurate information	46	3.85	(15.4%)	(61.5%)	(15.4%)	(7.7%)	-	Positive
The e-learning system provides complete and sufficient information	46	3.54	(20.0%)	(44.0%)	(24.0%)	(12.0%)	-	Positive
The e-learning system provides precise and clear information	46	3.50	(16.0%)	(44.0%)	(32.0%)	(8.0%)	-	Positive
The information provided by e-learning system meets my needs	46	3.65	(12.0%)	(64.0%)	(20.0%)	(4.0%)	-	Positive
The information provided by e-learning system helps to solve my problems	46	3.65	(11.2%)	(60.0%)	(28.0%)	-	-	Positive

The results in the table indicate the information quality of e-learning system. Majority of the respondents positively felt that e-learning system Information Quality provides correct and accurate information (mean=3.85), provides complete and sufficient information (mean=3.54), that e-learning provides precise and clear inform (mean=3.50). They further positively felt that e-learning system provides information that meets their needs (mean=3.65) and that the information provided by e-learning system helps to solve my problems.

The employee perception of E-learning system quality is presented in Table 4:17:

Table 4:17 E-learning System Quality

System quality	N	Mean	SA(5)	A(4)	N(3)	D(2)	SD(1)	Perception
The e-learning system provides good interaction mechanisms	46	3.81	(23.1%)	(42.3%)	(26.9%)	(7.7%)	-	Positive
The buttons for operation of the e-learning system are clearly and easily understood	46	3.84	(23.1%)	(40.0%)	(32.0%)	4.0%	-	Positive
The e-learning system responds quickly	46	3.52	(16.0%)	(32.0%)	(40.0%)	(12.0%)	-	Positive
The e-learning system is seldom out of use	46	3.04	(8.7%)	(34.8%)	(21.7%)	(21.7%)	(13.0%)	Neutral
The functions of the e-learning system work well	46	3.88	(12.5%)	(70.8%)	(12.5%)	-	(4.2%)	Positive

Apart from the fact that e-learning system is seldom out of use where majority of the users had a neutral perception, they positive felt that the e-learning system in their company were of good quality. Most respondents positively felt that e-learning system provides good interaction mechanism (mean=3.81), the button for operation of the e-learning system are clearly and easily understood (mean=3.84), that e-learning system responds quickly (mean=3.52) and that the functions of the e-learning system work well (mean=3.88).

4.4. Outcomes of E-learning adoption.

This section examines the outcomes of the adoption of e-learning on the development of the workforce as a way of evaluating its success as evaluated by both the SME managers and the employees who had used e-learning in the respondent firms in Kenya. In order to do so, the respondents were asked to identify their perceptions on the beneficial consequences of e-learning for both employee users and the SME managers. The findings for both employee users and employers are provided in the next two sections.

Perceived beneficial consequences of e-learning system use to overall employee job outcome

In order to measure the perceived beneficial outcomes from the use of e-learning among employees, the respondents were asked to rate selected items related to effects of e-learning on the quality of task completion, job performance and job satisfaction. The responses were rated on a 5 point Likert scale ranging from Strongly Agree (with a weight of 5) to Strongly Disagree (weighted at 1). Table 4.18 shows users perceived beneficial consequences of e-learning system use to overall job outcome.

Table 4.18 Employee E-learning outcome

Beneficial consequences	N	Mean	SA (5)	A(4)	N (3)	D (2)	SD (1)	Perception
Overall speaking, I can complete well the tasks that the organization assigns	46	3.88	(16.0%)	(56.0%)	28.0%)	-	-	Positive
Overall speaking, I feel satisfied with my job after using e-learning	46	3.60	(16.0%)	(40.0%)	(32.0%)	(12.0%)	-	Positive
Overall speaking, my job performance is good after using e-learning	46	3.88	(26.9%)	(38.5%)	(30.8%)	(3.8%)	-	Positive

Majority of them had a positive perception that they can complete well the tasks that the organization assigns them, that they feel satisfied with their job after using e-learning and that their job performance was enhanced after using e-learning system.

Perceived beneficial consequences of e-learning system use to SME Managers

In order to understand the outcome of e-learning use by employees, Managers were asked to rate the overall benefits of having their employees use e-learning. The respondents were asked to rate selected items related to outcome of e-learning. The responses were rated on a 5 point Likert scale ranging from Strongly Agree (with a weight of 5) to Strongly Disagree (weighted at 1). Table 4.19 shows managers perceived beneficial consequences of e-learning by employees to the firm.

Table 4:19 SME firm E-learning outcome

Outcome of E-learning	N	Mean	SA (5)	A(4)	N(3)	D(2)	SD(1)	Perception
Employee retention.	9	4.0	55.6%	22.2%		11.1%	11.1%	positive
Knowledge retention within the company	9	3.67	44.4%	22.2%		22.2%	11.1%	positive
Cost savings in travel and accommodation of staff.	9	4.1	66.7%	11.1%		11.1%	11.1%	positive
Competitive advantage over rival firms	9	3.67	55.6%	11.1%		11.1%	22.2%	positive
Productivity of employees is high	9	4.56	77.8%	11.1%		22.2%		positive
Job efficiency improvement	9	4.22	66.7%	11.1%		22.2%		positive
Reduced time away from work to study	9	4.67	88.9%			11.1%		positive

From the table, it can be observed that manager's perceptions of e-learning outcomes from adoption of e-learning are positive.

4. 5 Barriers facing Adoption of E-learning by SMEs in Kenya

In order to find out the barriers that SME firm managers in the respondent firms that had not adopted e-learning, the respondents were asked to indicate the barriers encountered. The responses are indicated in Table 4.20:

Table 4.20 Barriers to adoption of e-learning

Barriers to E-learning adoption	N (40)
Lack of knowledge towards e-learning	9
Lack of commitment from senior management	4
Lack of quality courses	4
Belief that e-learning infrastructure is costly	9
Inadequate hardware to support e-learning	7
Inadequate software to support e-learning	6
Inadequate bandwidth to support e-learning	3
Lack of human interaction	4
Reluctance of employees to embrace e-learning	9
Lack of support from agencies and companies to support e-learning	5
Lack of investment on the part of company in technology	8
Lack of relevant course	6
Lack of expertise or technical capacity	7
Lack of realism of business towards what e-learning can and cannot do	5
E-learning is not a priority	11
E-learning platform is costly	11

From the table, it can be observed that from the perspective of the SME managers that had not adopted e-learning, the challenges included areas such as prioritization of e-learning, costs of the e-learning platform and hence level of investment in technology, knowledge of e-learning, and employee reluctance to embrace e-learning are some of the significant barriers to its adoption.

Chapter 5: Discussions

5.1 Introduction

This chapter explains findings obtained after carrying out data analysis from data obtained in the field. The discussions are based on research objectives of the study which are primarily to find out the factors influencing adoption of e-learning by SMEs in Kenya and the challenges faced in adoption of e-learning technology.

From the study, the researcher found that SME firms had adopted various forms of ICT. The dominant technology used is telephone, email and internet. Stock control is the second major form of ICT that is deployed across the firms under study. Other forms of ICT adoption include customer relationship management and enterprise resource planning. As shown in table 4.3, there was limited adoption of e-learning among the study firms, with only 10 of the 50 SMEs reporting using the ICT platforms for e-learning. Thus use of e-learning as a mode of employee training is low.

This supports findings from studies world over. For example, Hamburg and Hall (2008) in their survey of e-learning adoption using the European Network data of 2002 found out that only a seven percent of the SMEs in Europe had used internet over the same period. They found out that SMEs concentrated in hiring new workers rather than training them. For example, the European Network for SME research in a survey found that nothing was mentioned on e-learning by the SMES. Beer et al. (2006) on the Analyzing and Reporting the Implementation of Electronic Learning (ARIEL) project a European project financed under the European eLearning initiative focusing on SMES and involving Germany, The Netherlands, Hungary, Ireland, Italy showed that research partners were unable to identify SMEs in Europe that were able to meet the EU criteria of e-learning. Similar experience was found by Sambrook (2003) who despite using leads, such as the “Fast Growth Fifty”, of the 146 SMEs contacted, only six percent of them had some experience with e-learning, while 5 out of the 9 experienced were e-learning providers.

SME firm managers’ views of e-learning were positive as shown in Table 4.6 with relation to the outcome of e-learning is beneficial to firms as it increases productivity of employees. This is an important factor why SME firms adopt e-learning. This is supported by findings by Nunes et al. (2009) that e-learning improves productivity of employees. SME managers do interact with the environment to find out the competitive edge of their competitors. Managers of SMEs had seen what other firms had achieved with e-learning thus influencing

decision to adopt the technology. Raymond et al. (2012) also conclude that the competitive context has a role to influence firms to adopt e-learning technology. The view is that a firm may adopt e-learning technology in use by a competitor if it feels that it gives them a competitive advantage, thus joining the bandwagon of playing in the same league with competitors.

On the influence of employer/manager characteristics on the adoption of e-learning, this study found that managers had positive attitude, were innovative, had IT competencies, and had experience with the internet. Raymond et al (2012) observe that SME managers' IT competencies, IT vision, IT value and IT control competencies are crucial to successful e-learning adoption as these IT skills helps them overcome fear of technology, are less resistance to change and thus easy to adopt new forms of learning with technology.

Information intensity of products or services influences the degree to which information is available. A firm that requires a lot of information to package its products or services for the market requires platforms for the exchange of that within it and outside. These, in turn, influence the knowledge and skills of its employees. Therefore, investment in e-learning is crucial for strategic purpose to remain competitive. Table 4.10 indicates that the firms rating for information intensity was positive. Thong and Yong (1995) found in a study that the higher the information intensity required for products and services, the higher the chance for firms to adopt IT. Thus SME managers invest in e-learning technology for their employees to remain knowledgeable and skilled for their firms to survive.

On the employee aspects related to adoption of e-learning in the study SMEs, the study examined such dimensions as the frequency and diversity of use, users' perceptions of ease of use and hence satisfaction with the quality of the information in the e-learning system and the system itself, and the outcomes on user productivity. From Table 4.12, employees frequently use e-learning and depend on the system to improve their knowledge and skills. This illustrates that there is transfer of skills and this reflects certain attributes of the e-learning system (Chen, 2010). Table 4.13 illustrates overall employee factors for adopting e-learning. They can be clustered in three categories: organizational, social, and learner orientation.

Key organizational aspects included employers encouraging employees to adopt e-learning and on-job training occurring more feasibly on the e-learning platform. The influence of organizational factors is also prominent in a study by Wang (2011) in which he found that organizational structures and policies were necessary to support e-learning. On the influence of social factors, findings from the study found positive sentiments from users regarding role

played by social networks in adopting e-learning such as interactions with other users in the company and friends who have used e-learning. Wang (2011) also observes that learning in the workplace creates social networks between learners and plays a big role in adoption of e-learning among users. Finally, an individual learner's goal orientation is crucial determinant in adoption of e-learning (Raymond et al., 2012). The results from study findings were positive on a number of factors on individual goal orientation for adopting e-learning such as commitment to continue using e-learning to facilitate job training.

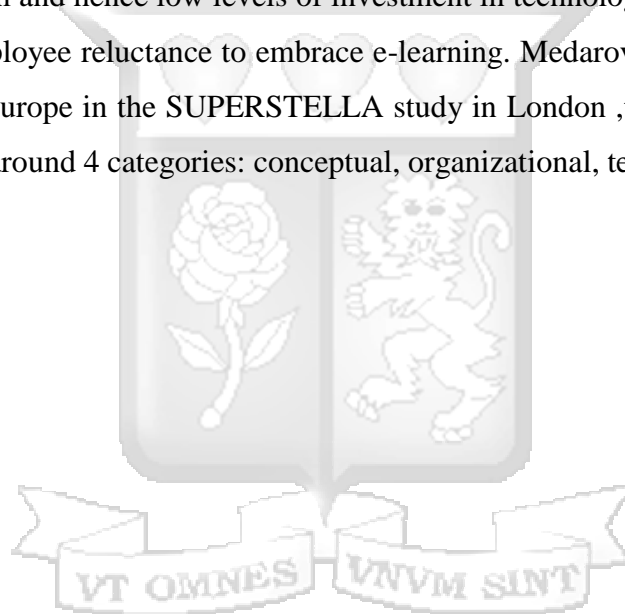
E-learning adoption is dependent on other factors beyond organizational, social and individual orientation. These are e-learning system factors that play a big role in adoption of e-learning technology. According to Chen (2011), a high quality system reduces resistance in using the technology thus facilitates learning using the medium. This is evident in fast response and ease of navigation by users as they interact with the system during learning. From Table 4.17, the results indicate positive views of system quality response as users navigate during learning. Further, high quality information on the system enhances greater understanding of the content provided (Chen, 2010). Table 4.16 indicated positive views that the information provided in e-learning is of sufficient quality to be authoritative and dependable in enhancing transfer of knowledge and skill ultimately aiding solve problems.

On the basis of high quality information and e-learning system, users' perceptions of usefulness and ease of use could then be derived. Tables 4.14 and 4.18 showed positive results on perceptions of ease of use and on all attributes of user satisfaction after using the e-learning system. Wang (2010) agrees that high quality system and information quality factors enhance human dimension of perceived attributes of perceived usefulness and user satisfaction. These findings also lend support to the extended technology acceptance model (TAM). These findings also support those by Cheng (2011) study in Taiwan on the importance of antecedents and consequences for employee acceptance of e-learning system within financial services SMEs. His study identifies four types of determinants: individual, system, social and network externality factors. The study concludes that all these antecedents "significantly affect user beliefs and perceived usefulness with regard to the e-learning system".

On the outcomes of adoption of e-learning on employees and SME managers, there are two aspects. The expected outcomes for employees in SME firms from use of e-learning are enhanced individual knowledge and skills development and hence improved productivity (Wang, 2011). Table 4.18 indicates positive sentiments from respondents of beneficial

consequences of using e-learning. There is satisfaction derived from knowledge and skills gained from using e-learning system which are transferred to assigned tasks. For SME managers who invest resources to obtain return on investment, their expectations are that investment in e-learning will be beneficial to the firm in gaining competitive advantage over its rivals, improve employee productivity and efficiency improvements (Chen, 2010). Table 4.19 illustrates positive sentiments from SME managers across several touch points of perceived beneficial consequences of e-learning system use.

On the challenges faced by SMEs that have adopted e-learning, Table 4.21 indicates barriers faced by SME firms in Kenya, which can be classified as organizational, technical and environmental factors. The most influential ones included: prioritization of e-learning, costs of the e-learning platform and hence low levels of investment in technology, knowledge of what e-learning is, and employee reluctance to embrace e-learning. Medarova et. al (2012) in their review of studies in Europe in the SUPERSTELLA study in London ,the USA and Australia cluster these barriers around 4 categories: conceptual, organizational, technical and the human factor.



Chapter 6: Proposed E-learning framework

6.1 Introduction

The results and findings of the study has identified gaps which can be used to develop a framework that can be implemented to enhance e-learning adoption by SMEs. This is augmented by elements identified in the review of literature that provide benchmarks for a robust framework. This chapter describes the proposed e-learning framework.

6.2 Proposed E-learning Framework

From literature review and findings of the study, it is envisaged that to provide good e-learning experience for employees in SME and facilitate e-learning adoption, the following structural components for e-learning are proposed: Organizational; Pedagogy; Technology and Environmental as shown in Figure 6.1.

Organizational

Investment in e-learning in a SME firm is primarily for the benefit of the organization to be able to adopt and compete in the global market. Therefore, e-learning needs to be part of the firm's strategic tools for improving productivity, efficiency and innovation by its employees. The organization needs to develop an e-learning policy that defines scope of e-learning on what it will cover, guides development and delivery of e-learning content, monitoring and evaluation, collaboration with other institutions to facilitate accreditation of e-learning courses thus obtain professional credit.

Organizational readiness by both management and employees. Top management support is crucial to support and create an environment for e-learning so that learning is part of the organization culture. Top management IT vision to embrace new learning methods supported by technology due to its pervasive nature of overcoming time and space limitations. Top management skills in IT enhance adoption. Managers who have experience and knowledge in IT systems overcome fear and barriers of using IT. Top management attitude towards e-learning technology is crucial. Positive attitude will enhance adoption.

Top management need to handle change management well. This is necessary to communicate to employees about change in learning process. Thus awareness of e-learning need to be communicated to employees. Evaluation of learning goals happen throughout the development and deployment cycle to check whether objectives are realized and hence optimize all the available resources.

Skills gap and competencies need to be carried out across the firm's employees for planning and prioritizing training. Employee IT skills also need to be evaluated. Employees with low level skills in IT systems are likely to fear and create barriers to others to embrace e-learning. Subject matter experts to be engaged by management either in the firm from highly skilled employees or external partners to develop content. Appropriate media to be chosen for instruction depending on budget requirements. Budget for infrastructure need to be planned.

Pedagogy

This dimension of e-learning addresses issues related to design approach on how best to deliver training. It is dependent on the SME learning environment, learner's background knowledge, learning objectives set by the firm and employees goal. There are various tools available that enable learners interact with learning content such as simulations, games, discussion, case studies, modelling, role-playing.

Technical

SME firms need to carryout assessment of technical infrastructure required to support e-learning so as to select appropriate components. It is also dependent on the media chosen to deliver e-learning. This includes IT hardware, software and communication links from providers.

Environment

At the work place, top management need to create a learning environment conducive for employees to continuously learn and apply knowledge and skills to their jobs. This constitutes learning culture in the firm. The e-learning platform capability may foster discussion though charts, blogs, bulletin and build communities of practice among learners. This facilitates creating support among employees and thus knowledge retention.

Other external institutional factors that can foster e-learning adoption in SMEs is collaboration with other firms through networking. They will create synergy among firms and reduce resource limitations for individual firm.

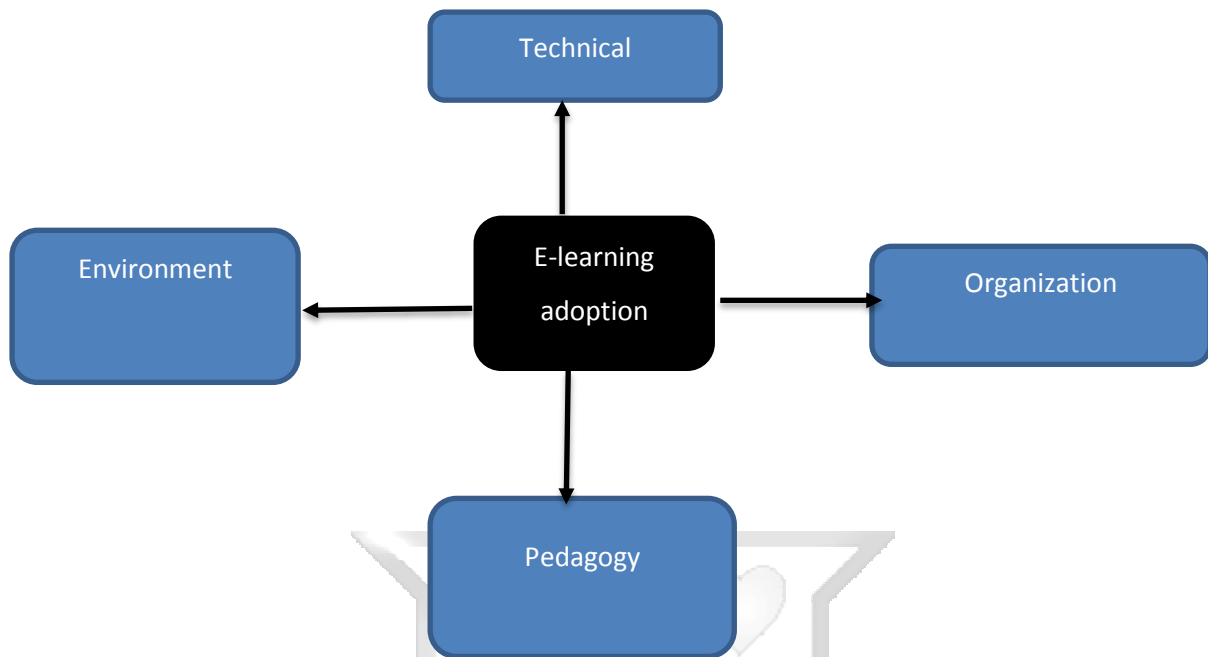


Figure 6.1 Proposed E-learning adoption framework for SMEs

6.3 Management framework for effective implementation of E-learning in SMEs

The focus in e-learning environment is the learner. Thus structures and process require to be in place surrounding the learner to ensure that the investments in technology will enhance productivity thus result to improvement in firm's competitiveness through efficiency, employee productivity and innovativeness for the firm to survive in the global community. Instructional design approach has proven to be effective in delivering quality learning to users (Caudill, 2013). The following processes based on instructional design are proposed to be used to develop a framework to ensure successful e-learning learning adoption:

- i. Needs analysis
- ii. Content development
- iii. Media development
- iv. User acceptance
- v. System deployment
- vi. Evaluation

Figure 6.2 illustrates the process.

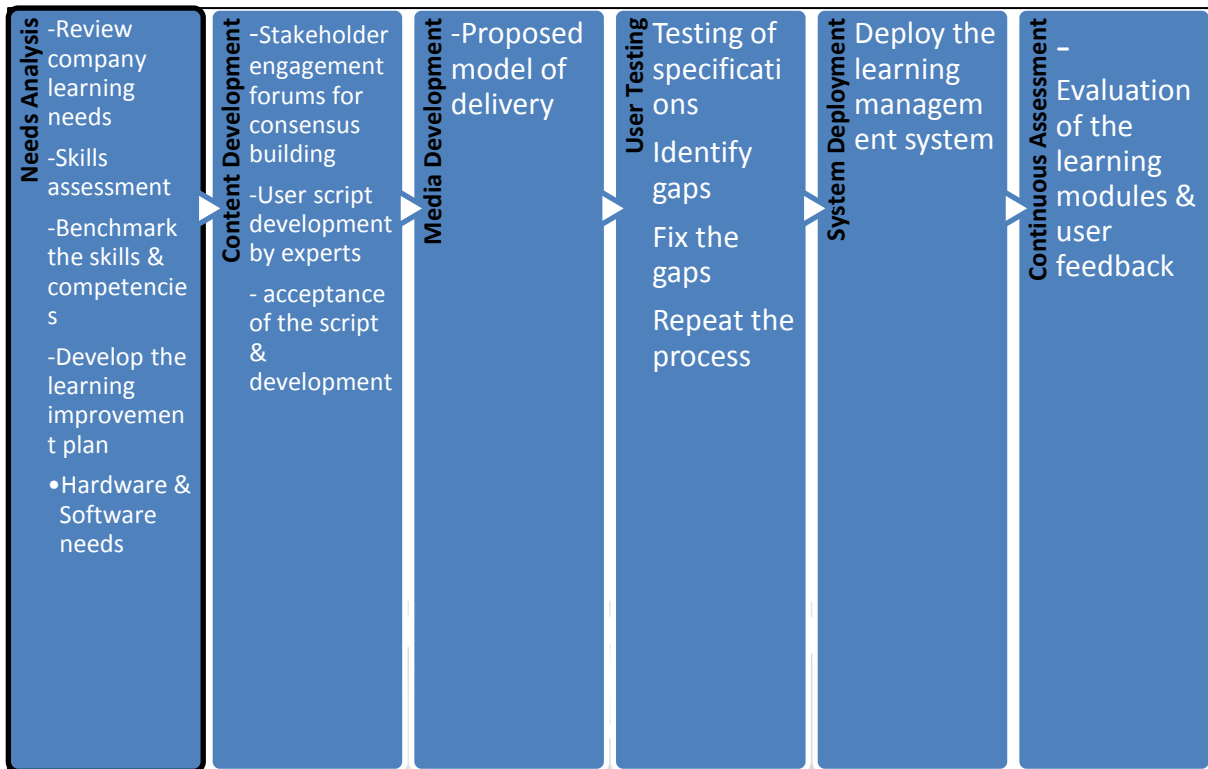


Figure 6.2: Management framework for adoption of E-learning System

Needs Analysis

It entails reviewing company learning needs arrived at after carrying out skills assessment of its employees. This helps to identify skills gaps in employees and also benchmark against best practices. Managers input is necessary to come up with all training requirements so that priorities and ranking is accomplished.

Content development

Various stakeholder engagement is necessary as training though is the responsibility of human resources department designing courses cuts across the firm. Experts from the various courses of training are identified and engaged. They may be from firm management, supervisors, employees or external practitioners. They will compile training materials and recommend how training will be delivered.

Media development

Various forms of media exists in e-learning environment such as text, interactive, video, etc. Media if applied well has capacity to improve learning experience (Caudill, 2013). It can

be used to enhance interaction among learners and the course content. Selection of appropriate media is dependent on pedagogy chosen.

User Testing

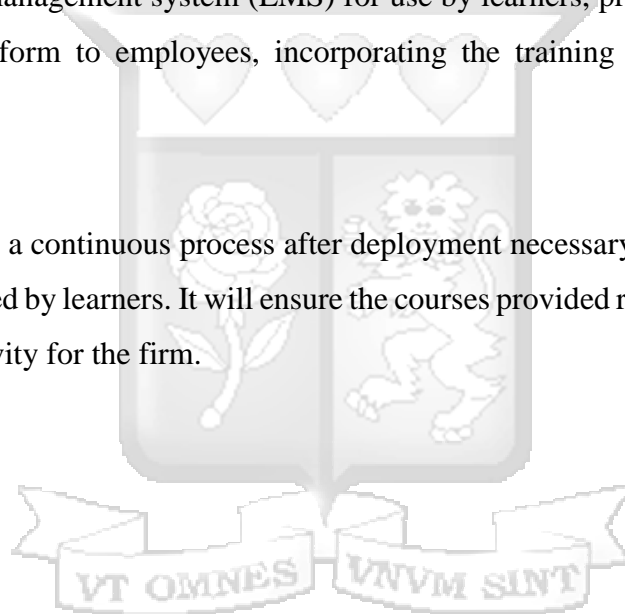
This takes various forms of carrying out technical viability of the media and evaluation of the content. Learners are involved to access the system and evaluate its capability to deliver quality learning experience (Caudill, 2013). The systems user interface, features and course content is tested with the aim of getting feedback to optimize before deployment.

System Deployment

There are a number of technical and organizational aspects that happen at this stage. Deploying a learner management system (LMS) for use by learners, promoting and preparing the new training platform to employees, incorporating the training into the firms overall strategic plans.

Assessment

This should be a continuous process after deployment necessary to optimize outcomes from feedback provided by learners. It will ensure the courses provided remain relevant, current and enhance productivity for the firm.



6.4 Validation of proposed E-learning framework

Validation questionnaire Appendix D was used to test the framework in two SMEs that had not adopted e-learning. The questionnaire was administered to HR manager. The respondents were required to provide answers on a 4-point Likert scale STRONGLY AGREE (4), AGREE (3), DISAGREE (2), STRONGLY DISAGREE (1). Their views were sort on the major factors of the proposed framework necessary to adopt E-learning namely organizational, technical, pedagogy and environmental.

The findings were as follows:

Table 6.1. Organizational factors

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Organizational strategic planning	2				
Top Management support	1	1			
Professional credit	1	1			
E-learning policy	1				
Employee readiness	2				
Foster Learning culture	2				
Monitoring & Evaluation	2				
Reward	1	1			
Provision budget	2				

Table 6.2 Technological factors

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Appropriate hardware	2				
Appropriate software (operating system, Learning management system)	2				
Adequate Bandwidth	2				

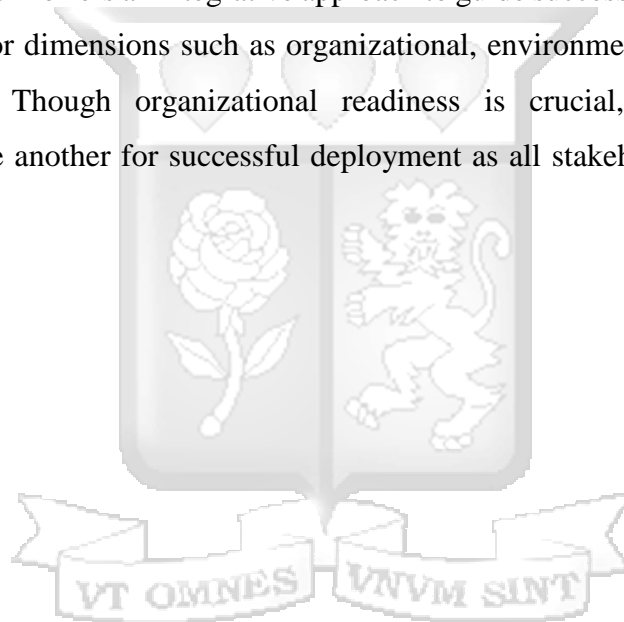
Table 6.3 Pedagogical factors

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
E-learning design approach (discussion, interaction)	1	1			

Table 6.4 Environmental factors

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Engage stakeholders (Management & Employees)	2				
Conducive Learning environment	2				
Motivation	1	1			
Collaboration with government & agencies	2				
Collation with other SMEs	1	1			
Collaboration with content providers	2				
Technical support	2				

The proposed framework offers an integrative approach to guide successful e-learning adoption by incorporating major dimensions such as organizational, environmental, technological and pedagogical factors. Though organizational readiness is crucial, the dimensions are interdependent on one another for successful deployment as all stakeholders are involved in the process.



Chapter 7: Conclusion

7.1. Introduction

The central purpose of the study was to examine the status of adoption of e-learning in SMEs in Kenya so as to assess the impact of the adoption on employee productivity and organizational performance, to determine the factors accounting for the observed impact, and to propose a framework to enhance successful e-learning adoption. The specific objectives that guided the research study are presented below:

- i. To identify factors influencing e-learning adoption by SMEs in Kenya.
- ii. To identify challenges facing e-learning adoption by SMEs in Kenya.
- iii. To propose a framework that will enhance successful e-learning adoption by SMEs in Kenya.
- iv. To validate the proposed framework.

A total of 50 SMEs were included in the study with responses provided by 50 SME managers and 46 SME users employed in the SMEs that had adopted e-learning.

7.2. Summary of findings

The study found that only ten of the SME firms studied had adopted e-learning. This implies a low level of adoption. These firms were also information intense.

Within the respondent SMEs that had adopted e-learning, the influence of employer/manager characteristics on the adoption of e-learning, were significant with the findings being that managers had positive attitude, were innovative, had IT competencies, and had experience with the internet.

On the employee aspects related to adoption of e-learning in the study SMEs, the study examined such dimensions as the frequency and diversity of use, users' perceptions of ease of use and hence satisfaction with the quality of the information in the e-learning system and the system itself, and the outcomes on user productivity. Employees frequently use e-learning and depend on the system to improve their knowledge and skills. Key organizational aspects included employers encouraging employees to adopt e-learning and on-job training occurring

more feasibly on the e-learning platform. On the influence of social factors, findings from the study found positive sentiments from users regarding role played by social networks in adopting e-learning such as interactions with other users in the company and friends who have used e-learning. The results from study findings were positive on a number of factors on individual goal orientation for adopting e-learning such as commitment to continue using e-learning to facilitate job training.

The positive perceptions above in turn positively influenced e-learning system factors that play a big role in adoption of e-learning technology. The study found positive views of system quality as users navigate during learning. Further, there were positive perceptions on the information provided on the e-learning systems with users rating it as being of sufficient quality to be authoritative and dependable in enhancing transfer of knowledge and skill ultimately aiding solve problems. Therefore the study showed positive results on perceptions of ease of use and on all attributes of user satisfaction after using the e-learning system.

On the outcomes of adoption of e-learning on employees and SME managers, two aspects were examined. There were positive sentiments from respondents of beneficial consequences of using e-learning. There is satisfaction derived from knowledge and skills gained from using e-learning system which are transferred to assigned tasks. For SME managers who invest resources to obtain return on investment, there were positive sentiments from SME managers across several touch points of perceived beneficial consequences of e-learning system use.

On the challenges faced by SMEs that have adopted e-learning, most influential ones included: prioritization of e-learning, costs of the e-learning platform and hence low levels of investment in technology, knowledge of what e-learning is, and employee reluctance to embrace e-learning.

7.3. Conclusions

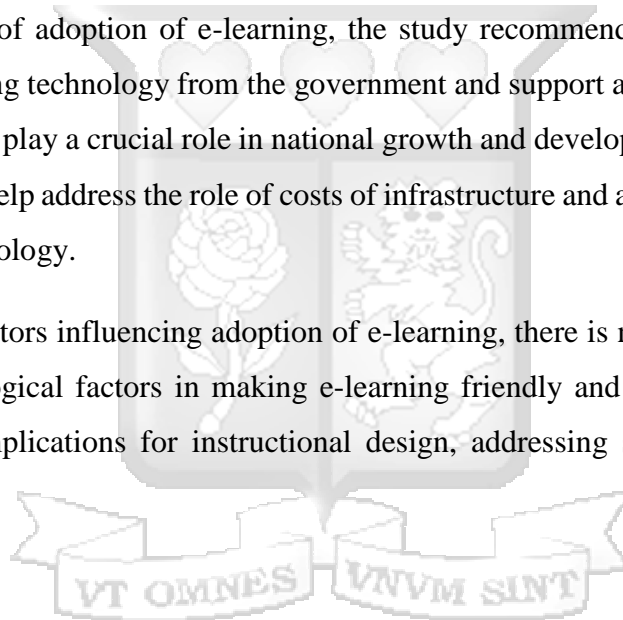
The study therefore concludes the following:

- i. On the status of adoption of e-learning in SMES in Kenya, the study concludes that there is limited adoption.
- ii. On the outcomes of the adoption of e-learning in SMEs in Kenya, the study concludes that these are positive for the SMEs managers and the users employed in the adopting firms.
- iii. On the challenges facing adoption of e-learning, the study concludes that organizational and technical factors are significant.

7.4. Recommendations

On the status of adoption of e-learning, the study recommends stronger support for adoption of the learning technology from the government and support agencies in the business environment as SMEs play a crucial role in national growth and development in any economy. Such support should help address the role of costs of infrastructure and awareness on new ways of learning with technology.

On the key factors influencing adoption of e-learning, there is need for further studies on the role of pedagogical factors in making e-learning friendly and effective in employee learning. This has implications for instructional design, addressing such areas as relevant content and media.



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Appendices

Appendix A: Letter of Introduction to respondents

Faculty of information Technology,
Strathmore University,
P.O. BOX 59857
Nairobi 00200
KENYA
Date:.....

Dear Respondent,

I am a student at Strathmore University undertaking a Masters degree in Computer-based Information Systems in the above-named department.

I am conducting a research project focussing on the impact of e-learning on the performance of SMEs in Kenya. The study holds the promise of aiding the development of vibrant SMEs in Kenya that can help realise the benefits of Kenya Vision 2030.

You and your firm have been identified as one of the key actors in Kenya's SME sector. I kindly request you to go through the questionnaire and provide answers to the questions to the best of your knowledge. You are assured that the information given is strictly for research purposes only and will be treated with utmost confidence. You are not required your name on the questionnaire.

I thank you for the co-operation.

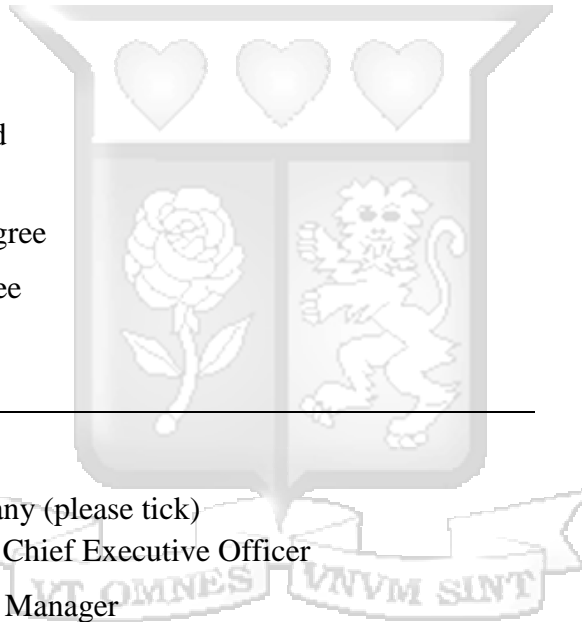
Yours faithfully,

Nicholas Mbugua. Thuo

Appendix B: HR Questionnaire

PART A: RESPONDENT

1. Name of respondent (optional) _____
2. Gender of respondent () Male () Female
3. Age of respondent (Please tick)
() 21-30 yrs
() 31-40 yrs
() 41-50yrs
() 51-60 yrs
() >61 yrs
4. Education background
() Diploma
() Undergraduate degree
() Postgraduate degree
() Doctorate
() Any other _____
5. Position in the Company (please tick)
() General Manager/ Chief Executive Officer
() Human Resources Manager
() Other (please indicate) _____



PART B: COMPANY CHARACTERISTICS

6. Name of company (optional) _____
7. Number of Employees
() less than 10
() 10-49
() 50-99
() 100-249
8. Business sector (Please tick one that apply to your organization)
a) Manufacturing ()
b) ICT ()

- c) Wholesale & Retail ()
- d) Hospitality ()
- e) Education & Training ()
- f) Healthcare ()
- g) Financial Services ()
- h) Transport ()
- i) Energy ()
- j) Other (please specify) _____

9. How many branches do you have? _____

10. What is your estimate annual turnover? (Please tick)

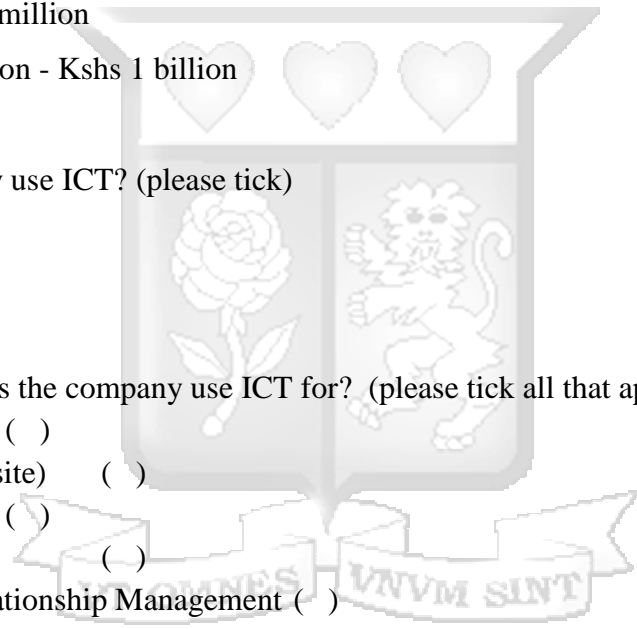
- () Kshs 10 -100 million
- () Kshs 101-500 million
- () Kshs 501 million - Kshs 1 billion

11. Does the company use ICT? (please tick)

- YES ()
- NO ()

12. If 'Yes', what does the company use ICT for? (please tick all that apply)

- a) Email ()
- b) Internet (Website) ()
- c) Stock control ()
- d) Telephone ()
- e) Customer Relationship Management ()
- f) Enterprise Resource Planning ()
- g) Human Resource Management ()
- h) E-learning ()
- i) Others. (please specify) _____



13. **Information Intensity.** Please tick (√) one of the following that apply. STRONGLY AGREE (5), AGREE (4), NEUTRAL(3), DISAGREE (2), STRONGLY DISAGREE(1)

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
My company is dependent on up-to date information					
It is very important for my company to have access to reliable, relevant and accurate information					
It is very important for my company to access information fast whenever we need the information.					

PART C: HR Manager Characteristics

14. **Innovativeness** Please tick (√) one of the following that apply about your personality on innovation. STRONGLY AGREE (5), AGREE (4), NEUTRAL(3), DISAGREE (2), STRONGLY DISAGREE(1)

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I have original ideas					
I create something new than improve something existing					
I often risk doing things differently					

15. IT KNOWLEDGE

I have the following computer experience (You may circle more than once)

- i. Attended computer course(s)
- ii. Use a computer at home
- iii. Use a computer at work
- iv. Have formal qualifications in the use and operation of a computer

v. None

16. I have the following internet experience (You may circle more than once)

- i. I use internet at home
- ii. I use internet at work
- iii. None

17. **Attitude Towards E-learning.** Please tick (√) one of the following that apply.

STRONGLY AGREE(5), AGREE(4), NEUTRAL(3),DISAGREE(2) or STRONGLY DISAGREE (1)

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
E-Learning increases productivity of employees					
I have seen what other companies have achieved with e-learning					
Using E-Learning is a good idea					
I feel that using e-learning is pleasant					
In my opinion, it would be desirable to use e-learning					

18. **E-learning Ease of use.** Please tick (√) one of the following that apply. STRONGLY

AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2) or STRONGLY DISAGREE (1).

	STRONGLY AGREE(5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
I believe e-learning is easy to use					
E-learning does not require a lot of mental effort					

PART D: E-LEARNING FRAMEWORK

19. Do you have an e-learning policy in place?

- () YES
- () NO

20. If YES, what is the scope of the e-learning? Please tick (√) all that apply.

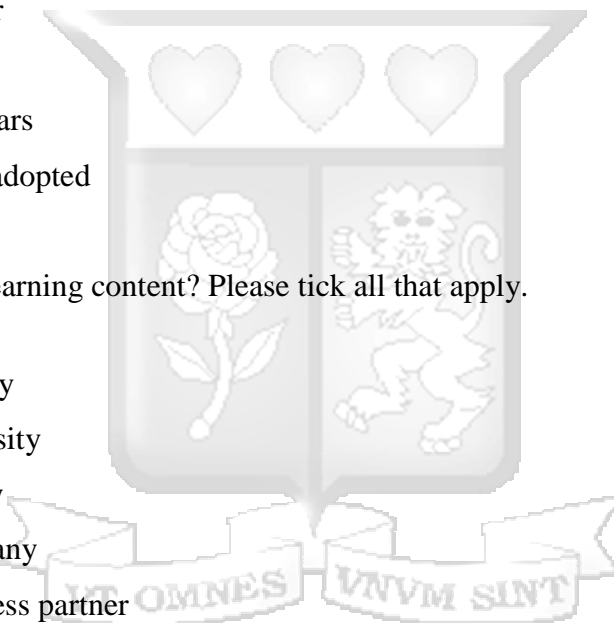
- On-boarding new employees
- Project Management
- Sales & Marketing
- Technical modules specific to our sector
- Customer service
- Finance
- Others (please specify) _____

21. How long has the company adopted using E-learning? Please tick.

- less than 1 year
- 2 -4 years
- more than 4 years
- E-learning not adopted

22. Who provides E-learning content? Please tick all that apply.

- In-house
- Local university
- Foreign university
- Local company
- Foreign Company
- External business partner



23. **E-learning Benefits.** What are some of the benefits of having deployed and used E-learning? Please tick (√) one of the following. STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2) or STRONGLY DISAGREE (1).

Outcome of E-learning	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
Employee retention.					
Knowledge retention within the company					
Cost savings in travel and accommodation of staff.					
Competitive advantage over rival firms					
Productivity of employees is high					
Job efficiency improvement					
Productivity of employees is high					
Reduced time away from work to study					

PART E: Barriers to E-learning adoption

24. Please tick all that apply why your company has NOT adopted and implemented E-learning

1	Lack of knowledge towards E-learning	
2	Lack of commitment from Senior Management	
3	Lack of quality courses	
4	Believe that E-learning infrastructure is costly	
5	Inadequate hardware to support E-learning	
6	Inadequate software to support E-learning	
7	Inadequate bandwidth to support E-learning	
8	Lack of human interaction	
9	Reluctance of employees to embrace E-learning	
10	Lack of support from agencies and companies to support E-learning	
11	Lack of investment on the part of company in technology	
12	Lack of relevant course	
13	Lack of expertise or technical capacity	
14	Lack of realism of businesses towards what E-learning can and cannot do	
15	E-learning is not a priority	

25. Do you plan to adopt E-learning in future? (Please tick)

YES

NO

Thank you so much for taking time to fill this questionnaire.

All the information will remain confidential and purely for academic purposes.



Appendix C: Employee Questionnaire

SECTION A: RESPONDENT

1. Name of respondent (optional) _____

2. Gender of respondent () Male () Female

3. Age of respondent (Please tick)

() 21-30 yrs

() 31-40 yrs

() 41-50yrs

() 51-60 yrs

() >61 yrs

4. Education background

() Certificate

() Diploma

() Undergraduate degree

() Postgraduate degree

() Doctorate

() Any other _____

5. Position in the Company _____

6. Length of service in the company _____

SECTION B: Evaluation of E-Learning System

As a user of E-learning, please give you answer to items no 7- 13.

7. **E-learning Use.** Please tick (√) one of the following that apply STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE about use of E-Learning.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I frequently use the e-learning system.					
I use many functions of the e-learning system.					
I depend on the e-learning system to improve my knowledge and skills.					

8. Information Quality

Please tick (√) one of the following that apply STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE about Information Quality provided by E-Learning

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
The e-learning system provides correct and accurate information.					
The e-learning system provides complete and sufficient information.					
The e-learning system provides precise and clear information.					
The information provided by e-learning system meets my needs.					
The information provided by e-learning system helps to solve my problems.					

9. System Quality

Please tick (√) one of the following that apply from STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE about System Quality provided by E-Learning

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
The e-learning system provides good interaction mechanisms.					
The buttons for operation of the e-learning system are clearly and easily understood.					
The e-learning system responds quickly.					
The e-learning system is seldom out of use.					
The functions of the e-learning system work well.					

10. Perceived Usefulness

Please tick (√) one of the following that apply from STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE about perceived usefulness provided by E-Learning

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
Using the e-learning system enhances my work efficiency.					
Using the e-learning system improves my job outcome and learning efficiency.					
Using the e-learning system enhances my competencies.					
Using the e-learning system improves my productivity.					
Using the e-learning system makes work become easy.					

11. User satisfaction

Please tick (√) one of the following that apply from STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE about user satisfaction after using E-Learning.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I am satisfied with the sufficient information of the e-learning system as it meets my work needs.					
I am satisfied with the efficiency of the e-learning system.					
I am satisfied with the effectiveness of the e-learning system.					

12. Perceived beneficial consequences of e-learning system use to overall job outcome.

Please tick (√) one of the following that apply from STRONGLY AGREE (5), AGREE (4), NEUTRAL (3), DISAGREE (2), STONGLY DISAGREE

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
Overall speaking, I can complete well the tasks that the organization assigns.					
Overall speaking, I feel satisfied with my job after using E-learning.					
Overall speaking, my job performance is good after using E-learning.					

PLEASE TURN OVER TO THE LAST PAGE



SECTION C: Reasons for adopting E-learning

13. Please tick (✓) one of the following that apply.

**SD =STRONGLY DISAGREE (1) D=DISAGREE (2) N= NEUTRAL (3)
 A=AGREE (4) SA=STRONGLY AGREE (5)**

	SD	D	N	A	SA
The company encouraged me to use E-learning					
Many of my on-job training requires me to use E-learning					
Many training courses can be accomplished only when using E-learning					
My learning interactions with the company, friends, and other businesses force me to use E-learning					
I have seen what others do using E-learning					
Many people in my social network (friends, family and workmates) use E-learning					
E-learning is very visible in my social network (friends, family and workmates)					
People around me who use E-Learning have more prestige than those who do not					
People around me who use E-Learning have a high profile					
Using E-learning is a status symbol for people around me					
Using E-learning is a good idea					
I feel that using E-learning is pleasant					
In my view, using E-learning is a wise idea					
I would continue to use E-learning for my learning need					
I would continuing to use E-learning for handling my on-job training in the future					

Thank you so much for taking time to fill this questionnaire.

All the information will remain confidential and purely for academic purposes

Appendix D: Validation Questionnaire

E-learning Adoption Framework

Kindly rate the importance of the following factors necessary for an SME to adopt eLearning.

MOST SIGNIFICANT (5), SIGNIFICANT (4), NEUTRAL (3), DISAGREE (2),

STRONGLY DISAGREE (1)

1. Organization

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Organizational strategic planning					
Top Management support					
Professional credit					
E-learning policy					
Employee readiness					
Foster Learning culture					
Monitoring & Evaluation					
Reward					
Provision budget					

2. Technology

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Appropriate hardware					
Appropriate software (operating system, Learning management system)					
Adequate Bandwidth					

3. Pedagogy

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
E-learning design approach (discussion, interaction)					

4. Environment

	STRONGLY AGREE (5)	AGREE (4)	NEUTRAL(3)	DISAGREE(2)	STRONGLY DISAGREE(1)
Engage stakeholders (Management & Employees)					
Conducive Learning environment					
Motivation					
Collaboration with government & agencies					
Collation with other SMEs					
Collaboration with content providers					
Technical support					

