UNIVERSITY OF NAIROBI

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SCHOOL OF COMPUTING AND INFORMATICS

MASTER OF SCIENCE IN INFORMATION SYSTEMS

INVESTIGATING FACTORS AFFECTING UTILIZATION OF COMPUTER APPLICATION SYSTEMS IN SERVICE SECTOR BASED ON TECHNOLOGICAL ACCEPTANCE MODEL: A CASE STUDY OF KENYA AIRWAYS LIMITED

BY

ERIC OMONDI OTIENO

SUPERVISED BY: DR. ELISHA ABADE

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DECLARATION

This research project is my original work and has not been presented for any award in any other university:

Signature: …… Date: ……

ERIC OMONDI OTIENO

P56/72528/2012

This research project report has been submitted for examination with my approval as a university supervisor:

Signature: …… Date: ……

DR. ELISHA ABADE

LECTURER, SCHOOL OF COMPUTING AND INFORMATICS

UNIVERSITY OF NAIROBI

ABSTRACT

Airlines use technology in daily operations to keep track of aircraft maintenance, flight and crew scheduling, passenger reconciliation, baggage tracking, revenue management and also use systems for business intelligence on their own flights to monitor capacity on each flight and also levels of reservation. However the troubling problems of underutilized systems continue, lack of user acceptance of technology can lead to loss of money and resources invested.

Therefore there is need to assess the acceptance of such technologies to establish factors that hinder or promote their acceptance. This study applied Technology Acceptance Model to examine the factors that influence the utilization of computer application systems in an airline. The study specifically focused on the external variables affecting the perceived usefulness and perceived ease of use of computer application systems. A survey was conducted to gather data which was coded in SPSS. Out of a total of 350 questionnaires distributed to airline staff, 286 were returned and validated. The analysis revealed that Perceived Ease of Use and Perceived Usefulness significantly influenced staffs' attitude towards using computer application systems. The results of the data analysis contributes to the body of knowledge by demonstrating that the above factors are critical in attitude towards usage of computer application systems in a developing country context. The implications of the results form a good basis for providing practical recommendations to the airline industry, and directions for further work.

DEDICATION

To my son Ernest, who gave me a reason to keep going on. To my family and parents for always challenging me to work hard, not forgetting the constant reminder" it won't be long!"

ACKNOWLEDGEMENT

I first and foremost thank the Almighty God for the opportunity to undertake this course and seeing me through to its completion.

Thanks a lot to my supervisor, Dr. Elisha Abade for your guidance and patience throughout this study. To all the respondents who took time to respond to the questionnaires, I thank you too for without you my study would not have been completed.

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May God bless you all!

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ACRONYMS

- IS :Information System
- IT :Information Technology
- ICT :Information and Communication Technology
- JKIA :Jomo Kenyatta International Airport
- KCAA :Kenya Civil Aviation Authority
- Generation I : A database-supported transactional system used for reservations, sale of airline tickets, and inventory management
- Generation II : A database-supported on-line transactional system used for reservations, airline tickets sales, and inventory management. Also includes sales monitoring functionality and revenue management for each individual flight in a given time period database-supported transactional system used for reservations, sale of airline tickets, and inventory management.
- Generation IV : Database-supported systems which can be easily customized.
- Generation V : For the implementation of a pricing strategy based on probability, knowledge database, and heuristic methods to obtain optimal profit
- MIS :Management Information System
- PEoU :perceived ease of use
- PU :perceived usefulness
- SPSS :Statistical Package for Social Sciences
- TAM :Technology Acceptance Model
- TOE :Technology, Organization and Environment

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Information technology (IT) is universally regarded as an essential tool in enhancing the competitiveness of organizations, there is consensus that IT has significant effects on the productivity of firms. IT is interchangeably used with Information Systems (IS) and Information and Communication Technology (ICT). Information technology and globalization has completely changed the business platform as well as the market structure and therefore a key determinant of competitive edge of organizations.

According to Curley (2014), Application software, or simply applications, are often called 'productivity programs' or 'end-user programs' because they enable the user to complete tasks such as creating documents, spreadsheets, databases, and publications, do online research, send email, create graphics, run businesses, and even play games! Application software is specific to the task it is designed for and can be as simple as a calculator application or as complex as a word processing application. Computer applications are being used in various fields to improve service quality (Commonwealth Secretariat ,2008). In today's business environment, many companies expect that a positive impact is established when they decide to implement an information system. IS implementation creates both positive and negative effects for an organization that uses it. This is because IT is represented as a facilitator, an initiator, or an enabler for the business (Kornkaew, 2012). According to Buhalis, (2003) ICTs-enabled

communications assisted airlines to interact with all their stakeholders and to update them with regards to their initiatives and developments.

Computer application systems are implemented by different companies with many industries adopting ICT to streamline process however the number of people who choose to adopt and use ICT is still relatively low. This can be attributed to the fact that in some cases IT is not in a position to solve these problems. To sustain a significant competitive advantage, innovation and product differentiation are critical for organizations (Wei, 2005)

According to Haag et al,(2005) Airline companies use technology in daily operations to keep track of aircraft maintenance, flight and crew scheduling, passenger reconciliation, baggage tracking, revenue management and also use systems for business intelligence on their own flights to monitor capacity on each flight and also levels of reservation. Despite impressive advances in software and hardware capabilities, the troubling problems of underutilized systems continue, developers and software industries are beginning to realize that lack of user acceptance of technology can lead to loss of money and resources.(Bugembe, 2010)

Many people think of technology as a tactical tool, something that can automate repetitive and tedious tasks (Daren, 2011). The perceived benefits are the end products that can be used to judge the success of the whole system. If the perceived benefits like easier communication, networking, and system integration, timely, relevant, complete and useful information are not realized, then the system will be perceived to have failed. Technology is as important as a machine – it cannot operate itself and make its own decisions – only a person can do this, and use technology as an aid to simplify tasks (PritiJain, 2006). With internet in place the world has become a global village and using technology the opportunity of online processes is one to be

taken advantage of, this is explored further through automating processes using computer applications.

According to Kenya Airways Annual Journal, (2011) Kenya Airways operates scheduled services throughout Africa and to Europe, Middle East and the Indian subcontinent and is a leading operator on the domestic routes. Kenya Airways is capable of carrying out all scheduled maintenance checks on all its current aircraft types. The airline maintains extensive workshop facilities for the overhaul and repair of mechanical, electrical and avionics aircraft components, including a module facility for handling large fan engines. The great chain of success has been made possible by among other things, the successful implementation and use of Information and Communication Technology. This has enabled the airline to enhance the communication and efficiency, while at the same time, reducing costs (Msafiri, 2012).

In this research we examine through the framework of the Technology Acceptance Model (Davis, 1989), some of the factors contributing to adoption and usage of computer application systems. This study also test in a developing world context the Technology Acceptance Model (TAM), a model long accepted and applied in the developed world.

1.2 Problem Statement

Most airlines utilize application systems to improve efficiency, save cost and expand outreach in the global operation. This involves huge investments in these areas. Some of the systems are in house developed and others are already off the shelf purchases supported by international vendors.

There has been a challenge in the level of utilization of the computer application systems in the aviation industry. The computer application systems need to deliver the expected outcome and also the return on investment in ICTs. This study is aimed at understanding these challenges so as to enable future effective utilization of computer application systems.

1.3 Purpose of the Study

The study was conducted to investigate the factors affecting utilization of computer application systems in local aviation industry.

1.4 Research Objectives

The general objective of this study was to investigate the factors affecting the utilization of computer application systems in local aviation industry.

Specific Research Objectives

Specifically, this study seeks to:

- To find out the effect of technological development in Kenya (level of infrastructure, support availability) on the utilization of computer application systems in the local aviation industry.

- To find out the effect of awareness on the utilization of computer application systems in the local aviation industry.
- To find the effect of perception on the utilization of computer application systems in the local aviation industry.
- To find out the effect of financial sector developments on the utilization of computer application systems in the local aviation industry.

1.5 Research Questions

The research seeks to answer the following questions;

i) What is the effect of technological development in Kenya on the utilization of computer application systems in the local aviation industry?

ii) What is the effect of awareness on the utilization of computer application systems in the local aviation industry?

iii) What is the effect of employee perception on the utilization of computer application systems in the local aviation industry?

iv) What is the effect of financial sector developments on the utilization of computer application systems in the local aviation industry?

1.6 Justification of the Study

Information Communication Technologies (ICTs) have revolutionized the entire business world. The airline industry in particular has fostered a dependency on technology for their operational and strategic management. Airlines were early adopters of ICTs and have a long history of

Technological innovation, in comparison to many other travel and tourism businesses. Since this study was investigating the factors affecting utilization of computer application systems in local aviation industry, the study will be beneficial to Kenyan airlines in using computer applications as essential tool in enhancing the competitiveness and to get return on investment in IT applications.

Since technology is dynamic, this study once completed will be used by scholars as reference material in the area of ICTs utilization more specifically in aviation industry.

The study will also act as a reference for policy makers in the ICT sector for formulating guidelines for aviation industry.

1.7 Scope of the research

Quite a number of airlines implement different forms of computer application systems which serve both company staff and airline customers. This research was limited to the utilization of the computer application systems by staff and agents of the local airline industry.

1.8 Limitations of the research

i) Local airline industry may not be representative enough to provide a typical research compared to international airline industry.

ii) Lack of research studies in the area of utilization of computer applications in aviation industry in developing countries implies missing the benefit of assessment studies based on comparable setting to Kenya.

1.9 Research Assumptions

The airline will permit the study to take place in the company and staff will be interested in the project.

Participants will be willing to participate in the study by creating time and giving relevant and genuine information.

That the sampled population is a representative of the whole population and method of data collections and interpretation will be as accurate as possible.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Information systems are classified as a group of components which can increase the competitiveness and gain better information for decision making (Kornkaew, 2012). In today's business environment, many companies expect that a positive impact is established when they decide to implement an information system. IS implementation creates both positive and negative effects for an organization that use it. This is because IS is represented as a facilitator, an initiator, or an enabler for the business (Kornkaew, 2012). Such systems need to provide seamless integration with other systems, including Operations Control, Reservations and Revenue Management, Maintenance Control, and Crew Management. They examine historic traffic data and previous load factors as well as forecast demand figures (Buhalis, 2003)

According to Buhalis(2003) all carriers depend on ICTs for their strategic and operational management and employ ICTs for a wide range of business departments. ICTs support all business functions and are critical for operating in the travel industry as a whole by empowering long-term decision making and by providing a platform for collaboration and transactions between partners as well as by interacting with prospective travelers and the general public.

Since airlines rely heavily on external partners for their operations, it is critical to develop efficient systems for working together with them. For example, all airlines need airport infrastructure as well as a variety of partners to support their operations. According to Buhalis,(2003) IT systems would efficiently facilitate this and factor in controls.

Moreover, the application system can increase levels of work monitoring which makes work become more visible. The application system allows a greater control of work by the managerial group. IT systems, increase the potential for workers to establish more clearly what is happening in their organisation, identify problems with work processes and suggest alternative ways of doing things. IT systems, can improve the quality of work and provide greater degrees of worker empowerment, further helping to remove many burdensome administrative activities, freeing up workers to devote more time to other issues (Kornkaew, 2012).

ICTs will not only formulate all elements of the marketing mix of airlines in the future, but they will also determine their strategic directions, partnerships, and ownership. Global alliances co-ordination can be achieved through harmonised ICT systems or through effective interfaces (Buhalis,2003). Hence, the ICTs are also instrumental for the globalisation of the airline industry. Airlines need to maximize the utilization of their most expensive resources: human resources and fleet. Therefore, they need to ensure that their equipment and aircraft is functional and its capacity fully used. Maintenance Control systems co-ordinate aircraft maintenance, commercial and operational requirements (Buhalis, 2003).From this paper the utilization of human resources and role is not covered in detail.

According to Kisielnicki,(2007), in most airlines the entire process is supported by IT, but only on a transactional level (Generation I and II). To provide fast sometimes instantaneous - reactions to the market changes, airlines need a Generation IV MIS. The application of MIS would significantly help with pricing analysis, decision making, and distribution, allowing for a precise and fast response to pricing changes. MIS would integrate all sources of price changes;

tailor the price changes to pricing analyst markets, and aid in decision-making processes. This study however does not cover the integration between the MIS and transactional level systems.

According to Kornkaew, (2012), MIS implementation has effects on an organisation and these effects are related to the consequences of the business processes. The research accesses descriptions of implementation effects and consequences which impact the organisation and its processes but is not covering the utilization of the application since implemention only does not guarantee that the company will be gain better information for decision making.

As an enabler IT offers the ability or the necessary support to achieve a goal though MIS implementation, however, it is high priced with costly assets, thus this implementation project requires detailed planning of its design, implementation and operation processes (Kornkaew, 2012).Furthermore ICTs-enabled communications assisted airlines to interact with all their stakeholders and to update them with regards to their initiatives and developments (Buhalis, 2003).Unfortunately, many organizations have faced a challenge with the systems integration which is not only an obstacle of the system, but also consist of independent systems so that, in some cases, they cannot communicate with each other (Kornkaew, 2012). This is where too many technologies fall down, leaving airlines to manage manually while the demands are even greater (Daren, 2011)

The negative effect of IS occurs when the system fails. This failure can be analyzed on the technical, project, organizational and environmental level. Hitherto, they have been prevented from doing so by the dominance of legacy systems that operate on proprietary protocols and platforms. This prevents airlines from communicating and also makes it difficult to develop

extranet applications and protocols for electronic exchanges with trusted partners, such as airports, distributors, and catering and handling companies. This can be resolved as recommended through a certain degree of technological standardization to support airlines in expanding their electronic exchanges and to maximise the operational efficiency of the entire system across all members of the alliance (Buhalis, 2003)

2.2 Models of IT adoption

2.2.1 Technology acceptance model

Technology acceptance models aim at studying how individual perceptions affect the intentions to use information technology as well as the actual usage. The Technology Acceptance Model was originally defined by Davis (1989), but it has subsequently been modified and augmented by other researchers.

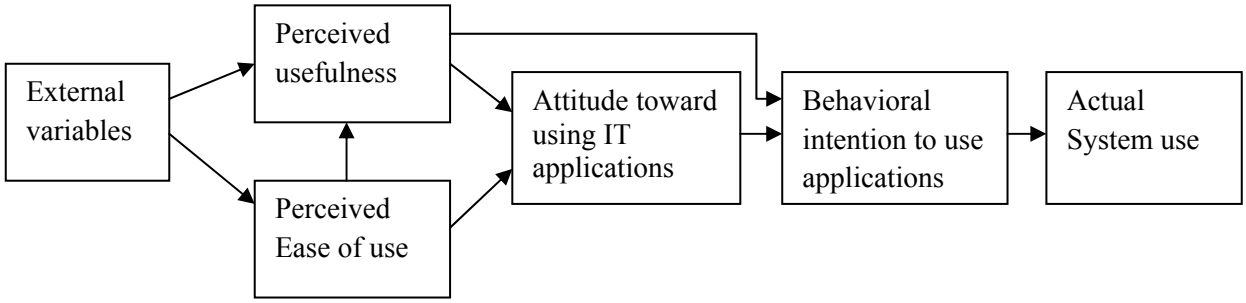


Figure 1: Technology Acceptance Model Davis (1989)

According to Davis (1989), two beliefs (perceived usefulness and perceived ease of use) predict attitudes, which in turn influence intended use of a technology. This intention then consequently impacts behavior of actual system usage. Perceived usefulness is the degree to which a user thinks a technology would enhance performance or productivity in the workplace. Perceived ease of use is the degree or lack of effort required by the user in adopting a given technology.

Perceived ease of use also affects perceived usefulness. Attitude refers to individual's positive or negative feeling about performing the target behavior while behavioral intention is the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior.

The TAM was focused on measuring opinions of individual workers, Davis, (1989), and, the model does not take into effect the possibility that a technology may be initially accepted, but later on abandoned, or vice versa.

2.2.2: Diffusion of Innovations

According to Rogers (2003) Diffusion of Innovations seeks to explain how innovations are taken up in a population. An innovation is an idea, behaviour, or object that is perceived as new by its audience. Instead of focusing on persuading individuals to change, it sees change as being primarily about the evolution or "reinvention" of products and behaviors so they become better for the needs of individuals and groups. In Diffusion of Innovations it is not people who change, but the innovations themselves. Reinvention is a key principle in Diffusion of Innovations. The success of an innovation depends on how well it evolves to meet the needs of more and more demanding and risk-averse individuals in a population. A good way to achieve this is to make users into partners in a continuous process of redevelopment.

Diffusion of Innovations offers three valuable insights into the process of social change:

- What qualities make an innovation spread?

- The importance of peer-peer conversations and peer networks.

- Understanding the needs of different user segments.

Diffusion scholars recognize five qualities that determine the success of an innovation.

Relative advantage

This is the degree to which an innovation is perceived as better than the idea it supersedes by a particular group of users, measured in terms that matter to those users, like economic advantage, social prestige, convenience, or satisfaction. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is likely to be.

Compatibility with existing values and practices

This is the degree to which an innovation is perceived as being consistent with the values, past experiences, and needs of potential adopters. An idea that is incompatible with their values, norms or practices will not be adopted as rapidly as an innovation that is compatible.

Simplicity and ease of use

This is the degree to which an innovation is perceived as difficult to understand and use.

New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

Trialability

This is the degree to which an innovation can be experimented with on a limited basis. An innovation that is trialable represents less risk to the individual who is considering it.

Observable results

The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Visible results lower uncertainty and also stimulate peer discussion of a new idea, as friends and neighbours of an adopter often request information about it.

The importance of peer-peer conversations and peer networks

The second important insight is that impersonal marketing methods like advertising and media stories may spread information about new innovations, but it's conversations that spread adoption.why? because the adoption of new products or behaviours involves the management of risk and uncertainty. It's usually only people we personally know and trust – and who we know have successfully adopted the innovation themselves – who can give us credible reassurances that our attempts to change won't result in embarrassment, humiliation, financial loss or wasted time.

Understanding the needs of different user segments

Diffusion researchers believe that a population can be broken down into five different segments, based on their propensity to adopt a specific innovation: innovators, early adopters, early majorities, late majorities and laggards.

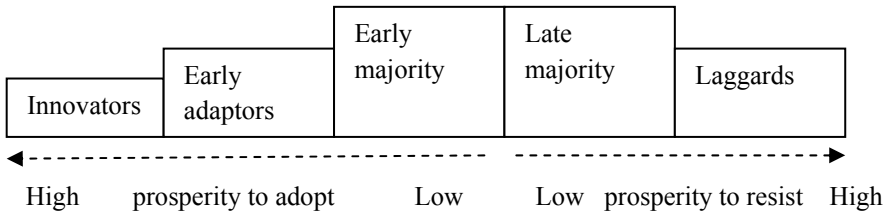


Figure 2: Summary of diffusion of innovations

Innovators: The adoption process begins with a tiny number of visionary, imaginative innovators.

Early adopters: Once the benefits start to become apparent, early adopters leap in. They are on the lookout for a strategic leap forward in their lives or businesses and are quick to make connections between clever innovations and their personal needs.

Early majority: Assuming the product or behaviour leaps the chasm, it may eventually reach majority audiences. Early majorities are pragmatists, comfortable with moderately progressive ideas, but won't act without solid proof of benefits. Majorities are cost sensitive and risk averse.

Late majority: They are conservative pragmatists who hate risk and are uncomfortable your new idea. Practically their only driver is the fear of not fitting in, hence they will follow mainstream fashions and established standards. They are often influenced by the fears and opinions of laggards.

Laggards: Meanwhile laggards hold out to the bitter end. They are people who see a high risk in adopting a particular product or behaviour. Some of them are so worried they stay awake all night, tossing and turning, thinking up arguments against it.

2.2.3 Technology, organization, and environment context

The Technology, organization and environment (TOE) framework was developed in 1990. It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context.

2.2.4 Uniform theory of acceptance and use of technology

This is a technology acceptance model that was formulated by Venkatesh and others in the journal "User acceptance of information technology : Towards a unified view". This theory aims to explain user intentions to use a particular technology and the subsequent behavior that follows. It holds four constructs as stated below;

•Performance expectancy – This is the degree to which a person believes that using a technology will help him or her attain gains in the job performance.

•Effort expectancy – This is explained as the degree of ease associated with the use of technology.

•Social influence - This is explained as the degree to which an individual perceives that important others believe he or she should use the new technology / system.

•Facilitating conditions – This is the degree to which an individual believes that an organization and technical infrastructure exists to support the use of the system or technology.

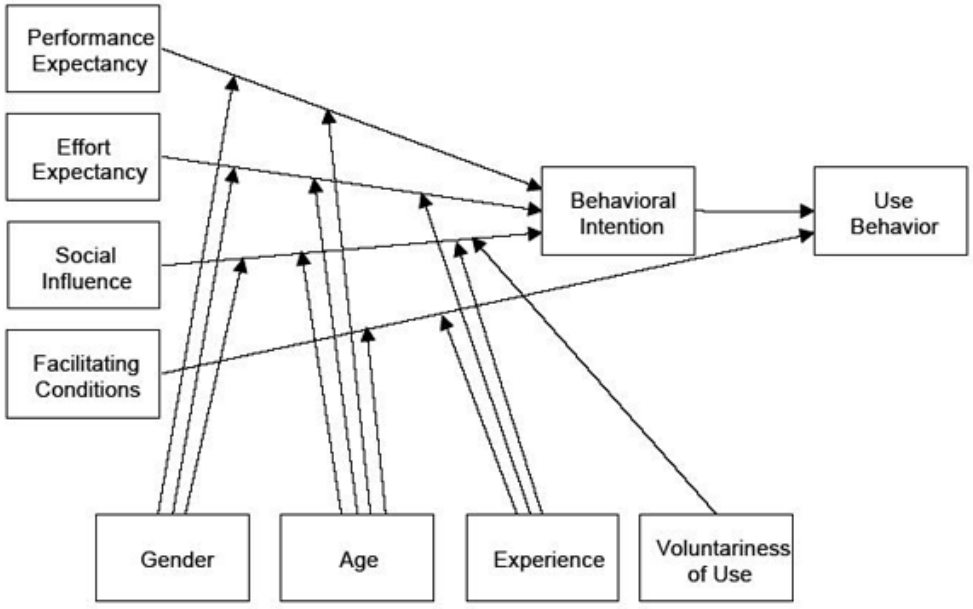


Figure 3: Uniform theory of acceptance and use of technology

Source: (venkatesh et al 2003)

2.2.5 Comparison of the theoretical models:

While diffusion theory provides a context in which one may examine the uptake and impact of information technology over time, it provides little explicit treatment of user acceptance (Dillon et al,1996). After the discovery of a new idea, or the invention and development of a new technology it does not automatically follow that this will be adopted by its potential users. In the work environment, intentions to use IT may be based on its anticipated impact on job performance, regardless of the individual's overall attitude toward that system. In other words, even though an employee may dislike a system, that employee may still use the system if it is perceived to increase job performance (thus, it has high perceived usefulness) (Dillon et al,1996). TAM may be criticized, however, for the lack of sufficient explanation about cognitive processes culminating in a user's acceptance of new technology.

Therefore in this research to better understand these factors affecting utilization of computer applications, it has been proposed that the issue should be seen from the technology acceptance perspective as well as conceptual overlap in different theories that will help in achieving the objectives of this study.

Similar studies

According to Miller, J. and Khera, O. (2010), TAM was found to work well in describing factors that affect usage of digital libraries in developing countries, with perceived usefulness as the main predictor of intent to use this system (The Essential Electronic Agricultural Library, or TEEAL), and with relevance as the major constituent driver of perceived usefulness and also found that particular predictors of perceived usefulness and perceived ease of use that are consistent across cultures (relevance, trust, and ease of access), while other constructs (social

norm, domain knowledge, visibility, and self-efficacy) demonstrated predictive power in only one setting. This setting does not cover the airline industry setting which gives an opportunity for study.

Application of the TAM to IT implementation in developing countries must be guided more by the specificities of local circumstances than by the performance of the TAM in highly-developed countries. (Miller, J. and Khera, O, 2010)

A Study done by Bugembe,(2010) to examine the relationship between Perceived Usefulness, Perceived Ease of Use, and Attitude towards using the new Dynamics Information System by Uganda National Examinations Board staff found out that perceived usefulness was more important in influencing technology acceptance in Uganda National Examinations Board. The study also revealed that perceived ease of use and perceived usefulness are correlated positively. This study however recommended incorporating unmeasured variables like perceived enjoyment, the behavior aspects, participation in training, technical support control issues, perceived risks and computer self-efficacy.

2.3 Theoretical Framework

We chose to look at acceptance of computer application systems through the Technology Acceptance Model (TAM) because it is a widely used and accepted model in the developing context that has been under-tested under different development conditions.

Since the introduction of the TAM by Davis (1989), the empirical evidence and research across hundreds of studies strongly suggest that TAM is a valid framework and reliable predictor of IT adoption (Agrawal, 1999; Davis et al., 1989; Hu et al., 1999; Venkatesh, 1999, 2000). Almost all of this research has been done, however, in the developed world. With its underpinnings

anchored in the social psychology theory of reasoned action (Ajzen and Fishbein 1980), TAM theorizes that a person's intention to adopt a particular IT is guided and determined by two distinct beliefs – perceived ease of use (PeoU) and perceived usefulness (PU). Perceived ease of use is defined as the extent to which a potential IT user perceives or believes that the use of that IT system will be free of effort (Thong et al., 2002). Perceived usefulness in turn is defined as the extent to which a potential IT user believes that the use of that IT system will enhance that user's job performance (Thong et al., 2002). Further, TAM theorizes that perceived usefulness has a direct and positive effect on perceived intention to use, while perceived ease of use has an indirect and direct positive affect on a user's intent to adopt an IT, or perceived intention to use. Perceived ease of use directly affects perceived usefulness and, therefore, perceived ease of use both indirectly and directly drives perceived intent to use (Thong et al., 2002).

As these studies suggest, while the TAM is fairly well accepted in the developed context, there is far from a consensus on whether and how the TAM functions in the developing context. This study aims to advance the literature by further testing the TAM in the developing world. This project also offers a chance to study the TAM in a new context, local aviation industry.

2.4 Conceptual Framework

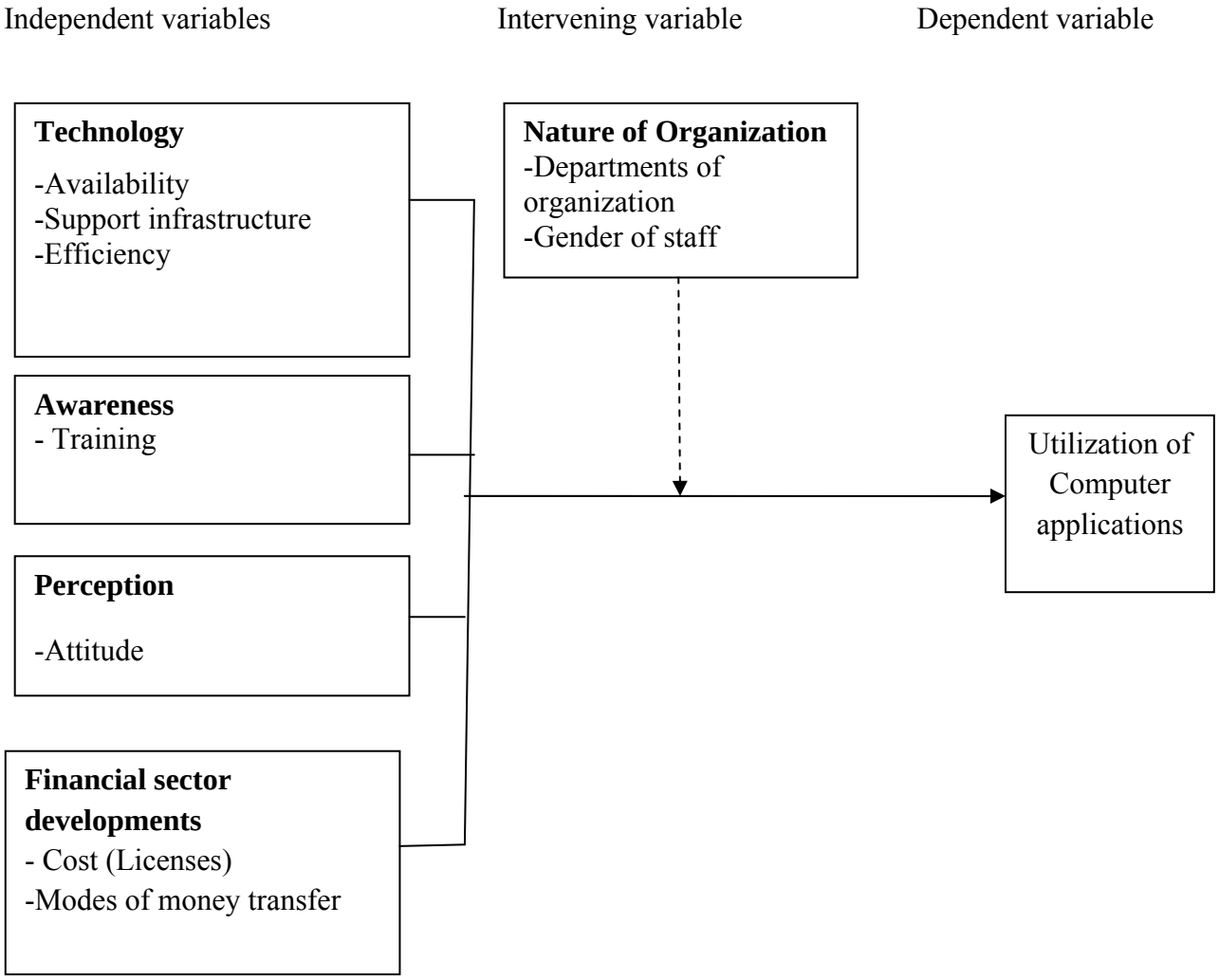
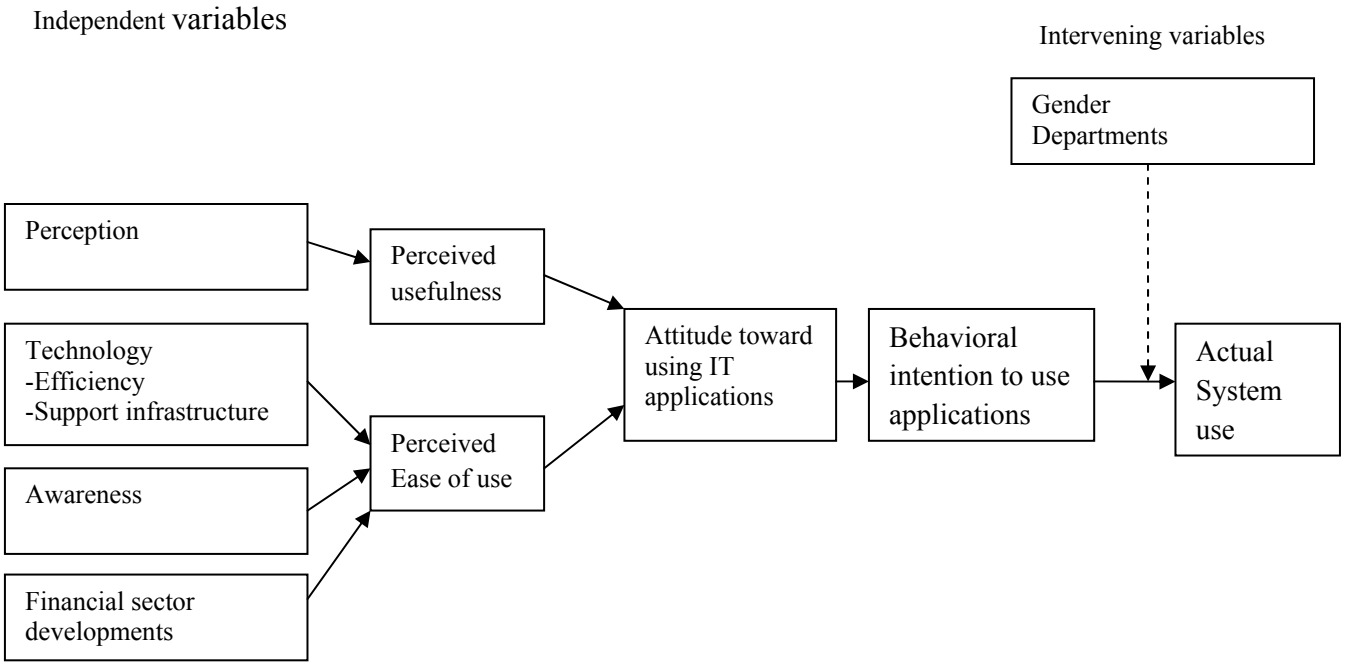


Figure 4: Conceptual Framework Source, Author

In the conceptual model proposed to guide empirical research, four factors are considered as the independent variables these are technological development, awareness, perception and financial sector developments. Each has an independent empirical role on utilization of computer application systems.

The model in relation to TAM:



Source, Author

Figure 5: Conceptual Framework in relation to TAM

2.5 Definition of variables

Table 1: Definition of the study variables

	Variables	Definition	Reference
	Perceived Usefulness (PU)	This is the degree to which a person believes that using a particular technology will enhance his / her job performance.	Fred and Davis 1989
	Effectiveness	This refers to the degree in which objectives are achieved and the extent in which the problem was solved.	Miller, J. and Khera, O. 2010
	Availability	Refers to a system or component that is continuously operational for a desirably long length of time.	Miller, J. and Khera, O. 2010
	Application Integration	is the process of bringing data or a function from one application program together with that of another application program.	Miller, J. and Khera, O. 2010
	Awareness	This is knowledge of the availability of new ideas and technologies by the public	ZIT - The Technology Agency of the City of Vienna (2013)
	User satisfaction	This is the Perceived opinion of the user about any computer or electronic applications that they use.	Doll and Torkzadeh's 1988
	Motivation	This is the pleasure that oozes out of an individual out of	Venkatesh and Brown 2005

		ease of using technology	
	Perceived Ease of use (PEoU)	This is the degree to which an individual believes that using a particular system will be free from effort.	Fred and Davis 1989
	Intention to Use	This refers to the desire of an individual to use computer application systems.	Fred and Davis 1989
	Cost	the price paid to acquire, produce, accomplish, or maintain anything	Oxford Dictionary
	License	The legal right to use a patent owned by another.	Oxford Dictionary
	Mode of transfer	refers to the cashless modes of payment or payment systems	Wikipedia, the free encyclopedia

2.6 Conceptualization of the Constructs:

Conceptualization is the process by which researchers define what they are going to study in their research work as precisely as possible. It is important to distinguish between the dependent and the dependent variables in your research. (Cooper and Schindler, 2011).

The researcher hypothesizes the relationship of dependence and independence. They invent them and try by reality testing to see whether the relationship will work out as intended. In this research the following variables will be tested in trying to answer the objectives of the study.

2.6.1 Perceived Ease of Use

Many studies of the past decade strongly suggest that perceived ease of use has a significant positive effect on behavioral intent to use, both directly and indirectly (Davis, 1989; Jackson et al., 1997; Venkatesh, 1999; Yi and Hwang, 2003). This study hypothesized that perceived ease of use of computer application systems would have a positive effect on the perceived intent to use computer application systems and the perceived usefulness of computer application systems.

H1: Perceived ease of use would be a significant predictor of perceived intent to use the computer application systems.

2.6.2 Perceived Usefulness

As a constituent part of the TAM, perceived usefulness has been demonstrated in numerous previous studies to have a positive effect on the intent to use a digital library (Davis, 1989; Hong et al., 2002). Based on this research, this study hypothesized that perceived usefulness would have a positive effect on the intent to use computer application systems.

H2: Perceived usefulness would be a significant predictor of perceived intent to use computer application systems.

2.6.3 TAM

Although TAM has been widely accepted in IT and information systems technology acceptance research, the original TAM model has been challenged for different reasons and within different contexts. Later research by Venkatesh and Davis (1996) proposed a TAM2 framework which recognizes that perceived usefulness and perceived ease of use are influenced by environmental differences, such as variations in subjective and social norms. The framework provides space for the independent variables that drive perceived ease of use and perceived usefulness.

2.6.4 External Factors Predicting Perceived usefulness

In the context of developing countries, previous literature has suggested that perceived ease of use is the stronger predictor of intent to use (Anandarajan, 2000; Brown, 2002), although not enough research has been done to be conclusive.In alignment with research around TAM2 (Davis et al., 1996), this study predicted the following external factors would have a positive effect on the perceived ease of use associated with computer application systems use

Awareness

According to Choudrie and Dwivedi (2005), this is the people's knowledge of the availability of technology and the services that are being offered,its visbility. This will play a big role in the acceptance and usage of computer application systems. Further,in the context of TAM, it has been demonstrated that the more a given system is visible to a member in the organization and the more it is visibly used by peers, the more likely the member is to use the technology or system (Karahanna et al., 1999; Thong et al., 2002). Training enhances the person's knowledge

of the respective discipline, domain, or area that is relevant. Past research has demonstrated empirically that persons with a higher level of domain knowledge were able to conduct searches and database queries more efficiently (without error) and more rapidly than novices (Marchionini et al., 1993; Thong et al., 2002). This study postulated that a positive relationship exists between training on IT and application systems and the perceived usefulness of computer application systems.

Perception

According to Fishbein and Ajzen, (1975), person's perception that most people who are important to him think he should or should not perform the behavior in question. Past studies have found that the perception has positive effect on the intent to use a given technology. It is important to asses this belief for the purpose of this study because it forms a bigger opinion about the whole idea especially to the airline staff using computer application systems. This study theorized that perception would have a positive effect on the perceived usefulness of computer application systems.

In alignment with research around TAM2 (Venkatesh and Davis, 1996), these external factors were predicted to have a positive effect on the perceived usefulness of computer application systems.

H3: Awareness and perception will together be significant predictors of the perceived usefulness of computer application systems.

2.6.5 External Factors Predicting Perceived Ease of Use

In the context of developing countries, previous literature has suggested that perceived ease of use is the stronger predictor of intent to use (Anandarajan, 2000; Brown, 2002), although not enough research has been done to be conclusive. In alignment with research around TAM2 (Davis et al., 1996), this study predicted the following external factors would have a positive effect on the perceived ease of use associated with computer application systems

Level of Infrastructure

Level of infrastructure is defined as the facilities and services that exist to support a given technology. In the case of computer application systems, these include electricity, a stable computer/ device, and a stable environment not subject to disruptions. Studies have shown that innovation requires a threshold level of infrastructure stability (Leonard-Barton and Deschamps 1988). This study therefore predicted a positive relationship between the level of infrastructure and the perceived ease of use of the computer application systems.

Financial sector developments

This is the consumers' cognitive trade-off between the perceived benefits of the applications and the monetary value they have to part with. Dodds et.al. (1991).It is perceived that the cost of any technology have a direct impact on its usage by the consumers.

Computer Literacy

As a computer application systems use requires at least a rudimentary knowledge of basic computer usage usage and related procedures. Several studies indicate that a positive relationship exists between previous computer usage/computer fluency and the adoption of a computer-

dependent technology (Atkin and LaRose, 1994; Lin, 1998). Experience with the Internet also had a significant impact on the user's perception or perceived ease of use (Koohang and Ondracek, 2005). This study predicted a positive relationship between computer literacy and the perceived ease of use of the computer application systems.

Support on application systems

Studies have shown that the adoption of technology is dependent largely on the support environment around that technology, and the help available from others (Buyukkurt and Vass, 1993; Igbaria, 1994; Westcott, 1985). The availability of such help is a precondition to the perception of a technology's ease of use. This paper theorized that availability of support would have a positive effect on users' perceptions of the ease of computer application systems.

Ease of Access

Ease of access is defined as the degree of ease experienced by a user in accessing computer application systems. This study predicted a positive relationship between the degree of ease of access and the perceived ease of use of computer application systems.

Based on research with TAM2 (Davis et al., 1986), these external factors were predicted to have a positive effect on the perceived ease of use as the use relates to computer application systems in the aviation industry.

H4: Computer literacy, level of infrastructure, support availability, financial sector developments and ease of access will together be significant predictors of computer application systems perceived ease of use.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section gives a preamble to the methodology to be used in this study. It describes the study design, area of study, target population, sample size, sampling technique, data collection procedure, data collection instruments, ethical issues and data analysis method.

3.2 Research Design

Research design is the arrangement for collection and analysis of data in a manner that aims to combine relevance to the research with economy in procedure (Kothari, 2004). The research design constitutes the blue print for proposal development, data collection, data analysis and report compilation and allows for the collection of relevant evidence with a minimum expenditure of effort, time and money.

3.3 Area of Study

Due to the time frame for the completion of the research and getting approvals from companies to conduct the research, the study was carried out for one local airline. There are seven local airline operators according to Kenya airports authority (Airline operators, 2014). Questionnaire was sent to airline staff accessing various computer application systems.

3.4 Target Population

The target population of this study was the airline staff using computer application systems for their daily work, in the selected airlines.

3.5 Sample Size

This refers to the size of the population that is going to be used in the research. According to Kothari (2004), factors such as proposed classes, nature of the study, sampling techniques, nature of the universe, accuracy standards should be put into consideration for the purpose determining the sample. In this regard, he proposed two methods for determining the sample size.

Use of Bayesian statistics to weigh the cost of additional information against the expected value of the information added.

Specifying the precision of estimation desired and using it to determine the sample size required to insure it.

In this research, the first method was used.

$$n = \frac{Z^2 \cdot pq}{d^2}$$

where:

n= desired sample size (if the target population is greater than 10,000)

Z =standard normal deviate at required confidence level.

p = the proportion in the population estimated to have characteristics being measured.

q = 1-p

d= margin of error / precision

If the proportion of a target population with a certain characteristic is .50, the z-statistic is 1.96 and desired accuracy at .05 level, then sample size is:

$$n = \frac{(1.96)^2 (.50)(.50)}{(.05)^2}$$

(Mugenda and Mugenda, 2003)

If the target population is less than 10000

Adjusted sample size

$$nf = \frac{n}{1 + (n/N)}$$

Where

nf = the desired sample size when population is less than 10,000

n = the desired sample size when population more than 10,000.

N = the estimate of the population size (Mugenda and Mugenda, 2003)

As at 31st March 2013, Kenya Airways' headcount stood at 4,006 (Kenya Airways Limited, Annual report and financial statements 2013)

For a population of 4006

nf = 384/(1+(384/4006))

nf = 350

3.6 Sampling Technique

Deliberate sampling approach was used. Deliberate sampling is also known as purposive or non-probability sampling (Kothari, 2004). The support staff, managers and other staff using the computer applications were deliberately selected; this enhanced getting the relevant feedback for this study. Purposive approach was used to draw the respondents.

3.7 Data Collection Method

3.7.1 Data Source

Primary and secondary data were used. The researcher gathered secondary data from several books, research literatures, articles, journals and data from the airline company. Internet sources were also used. Primary data was obtained real time from the respondents within the sample.

3.7.2 Data Collection Instruments

Structured questionnaire was used to obtain information from the sample. These was self-administered and also sent online.

Advantages of Using Questionnaires for Data Collection

- It is cost effective and can be emailed to a large number of respondents.
- It requires less skills to administer compared to personal interviews
- Questionnaires are free from bias from the interviewer Kothari (2004)

Disadvantages of using questionnaires

- You do not know who fills the questionnaire
- Response is not always immediate.
- It is difficult to verify accuracy of the answers that are provided

3.7.3 Data Collection Procedure

The researcher got a letter of introduction from the university. Following this, there was scoping and tooling for the exercise which was done. The researcher then contacted the target staff, introduced them to the process and set dates for data collection from them. Questionnaires were availed online and some delivered physically by researcher to the respondents.

Out of the 350 questionnaires that were distributed, samples of 286 questionnaires were filled with usable data. Questionnaires were availed to respondents through an online link which was sent on email and also printed copies were handed over to respondents at their working place due to nature of work. Completed hardcopy questionnaires were collected through reference people while online data was captured as response was received.

The study used qualitative data analysis methods – content analysis. The researcher compiled and reviewed all responses to determine the outcome of the findings. First part of the questionnaire focused on the respondents characteristics. This was important to show the respective characteristics. The second part of the questionnaire focused on the factors affecting utilization of computer applications, all the questions were directed at investigating these factors.

3.7.4 Instrument Validity and Reliability

The research instruments will be exposed to experts, supervisors and peers for validity check. Validity: according to Cooper and Schindler, (2000) validity is the extent to which a given finding shows what is believed to show. In order to confirm the validity of the research tool, the questionnaires were carefully examined to confirm proper coverage of the research objectives and to ensure content validity. Cooper and Schindler, (2000), referred to content validity as that instrument comprising of a representative sample of all the possible items for each category area.

Reliability: Reliability is that quality of measurement method which suggests that same data will be collected each time in repeated observation of the same phenomenon (Chandran, 2004). The reliability of questionnaire data captured is in Appendix III. The reliability coefficient of 0.7 and above was recommended (Cronbach, 1951).

3.7.5 Ethical considerations

Throughout the study the principle of honesty, integrity and confidentiality was maintained. Participants were informed of the purpose of the study as a first step to conform to the principle of voluntary and informed consent. The researcher then sought for approval from the airline companies before fieldwork.

3.8 Data Analysis and Presentation

The study adopted a descriptive analysis approach which was used to summarize the characteristics of the respondents. The quantitative data was analyzed by use of both the descriptive and inferential statistics. The descriptive statistics involved the use of mean, frequency, percentages and standard deviation. In order to check the relationship between the variables Chi square was used. Chi Square was relevant in testing relative differences in the acceptance and usage of computer applications. Qualitative data was analyzed by use of themes, to ease the study patterns of the various responses and use them to make conclusions on whether the hypothesis being tested has been proven or not. Methods such as mean, mode, regression analysis were also employed in the data analysis stage.

3.9 Likert Scale in measuring attitude

Likert type scale is the most commonly used rating scale, these are used to measure perception, attitude, values behavior (Mugenda and Mugenda, 2003). In this research the likert scale was used in measuring the attitudinal aspects of the study and questions shall be posed for the respondents to gauge themselves on the degree to which they agree or disagree to the statements described in the questionnaire.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter provides an analysis of data collected from the field. The results have been presented in tables, figures and content delivery to highlight the major findings. They are also presented sequentially according to the research questions of the study. Mean scores and standard deviations analyses have been used to analyse the data collected. The raw data was coded, evaluated and tabulated to depict clearly the factors affecting utilization of computer application systems in the local aviation industry.

4.2 Sample Characteristics

4.2.1 Response Rate

Out of the 350 closed questionnaires administered only 286 questionnaires were filled and received back. This gave a response rate of 82%.

4.2.2 Demographic Characteristics

The study sought to establish the information on the respondents employed in the study with regards to the gender, academic background and duration of service. These bio data points at the respondents' appropriateness in answering the study questions.

Gender of respondents

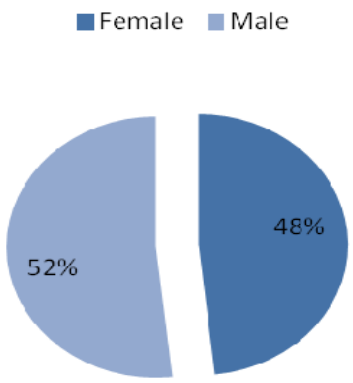


Figure 6: Gender of respondents

The respondents were asked to show their gender, this was expected to guide the researcher on the conclusions regarding the degree of congruence of responses with the gender characteristics. Majority of the respondent (52%) were males whereas 48% of the respondent were females, this is an indication that both genders were involved in this study and thus the finding of the study did not suffer from gender bias.

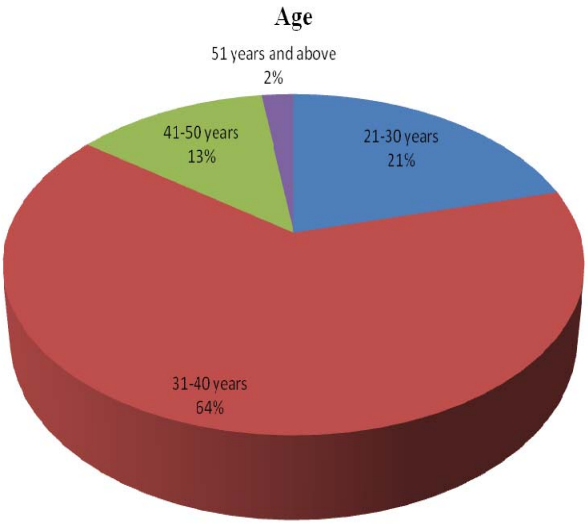


Figure 7: Age of respondents

From data on age majority of the respondents (64%) were aged between 31 to 40 years while the minority (2%) were 51 and above years of age. These results show that the study sample was sensitive to the age of the respondents capturing opinions across all the age groups.

Academic background

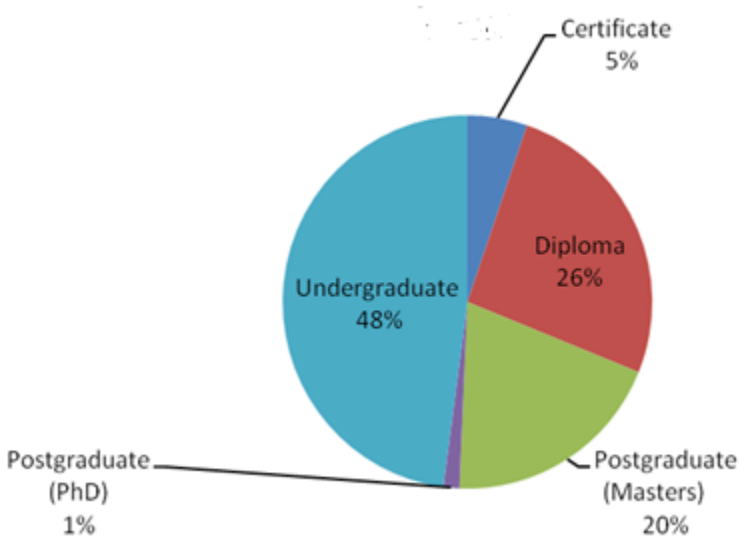


Figure 8: Academic background

The respondents were asked to indicate their academic background. From the study findings majority of the respondents 46% indicated they had undergraduate degree. This was followed by those who had a diploma at 26%. 20% of the respondents indicated they had a postgraduate (masters) degree, 5% indicted they had attained a certificate while 1% had postgraduate (PhD) degree. This is an indicator that majority of staff had taken degree courses.

Years of service

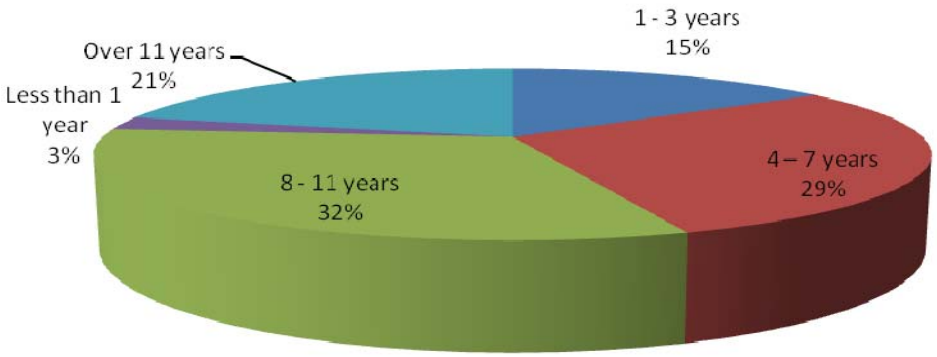


Figure 9: Years of service

The respondents were asked to indicate the number of years worked for the company, 32% indicated that they had been working for between 8 to 11 years, 30% indicated a period of between 4 to 7 years, 21% indicated a period of over 11 years, 15% indicted that they had worked for between 1 and 3 years, while 3% indicated a period of less than 1 year. This is an indicator that company had more experienced staff who had worked for more than 4 years.

Respondents by department

	Frequency	Percent	Valid Percent	Cumulative Percent
Ground Services	42	14.7	14.7	14.7
Flight Operations	40	14.0	14.0	28.7
Engineering	51	17.8	17.8	46.5
Information Technology	29	10.1	10.1	56.6
Commercial	53	18.5	18.5	75.2
Human Resources	8	2.8	2.8	78.0
Finance	27	9.4	9.4	87.4
Others	36	12.6	12.6	100.0
Total	**286**	**100.0**	**100.0**	

Source: research data

Table 2: Respondents by department

The respondents were asked to indicate which department they are in, 18.5% were in commercial,17.8% Engineering, 14.7% in Ground services, 14% in Flight Operations, 12.6%

were in other departments like COO,10.1% in IT, 9.4% in Finance while 2.8% in Human Resource. This represented fair distribution across all departments

Computer skills –basic skills

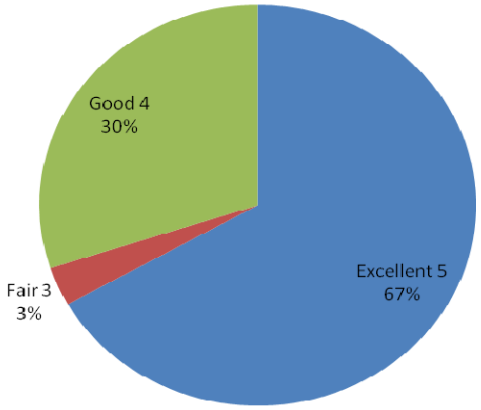


Figure 10 : Computer skills - basic skills

From the figure above on basic computer usage 67% of respondents had excellent, 29% good while 3% were fair.

Computer skills – Internet usage

Figure 11: Computer skills – Internet usage

From the figure, on internet usage 61% of respondents had excellent skills, 37% good while 3% had fair.

Computer skills – Basic computer maintenance

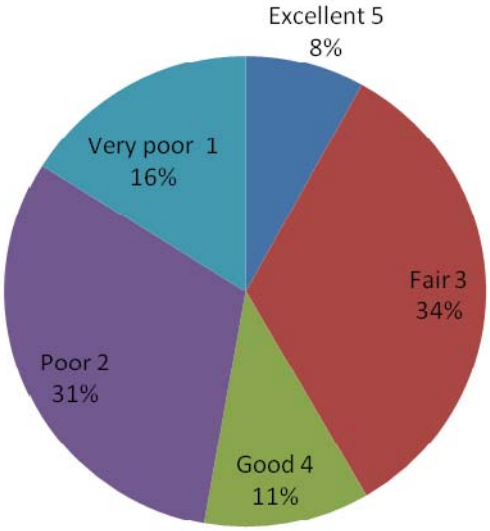


Figure 12: Computer skills – basic computer maintenance

On basic computer maintenance 6% of respondents had excellent skills, 13% had good, 33% had fair, 31% had poor while 15% had very poor skills.

Computer skills - programming

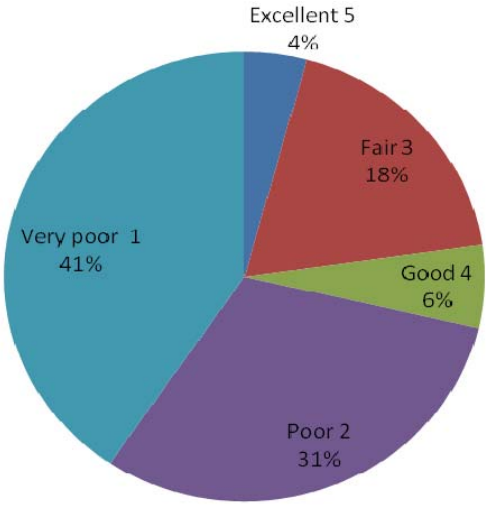


Figure 13: Computer skills - programming

On computer programming 4% of respondents had excellent skills, 6% had good, 19% had fair, 31% poor while 40% very poor skills.

Number of people in department

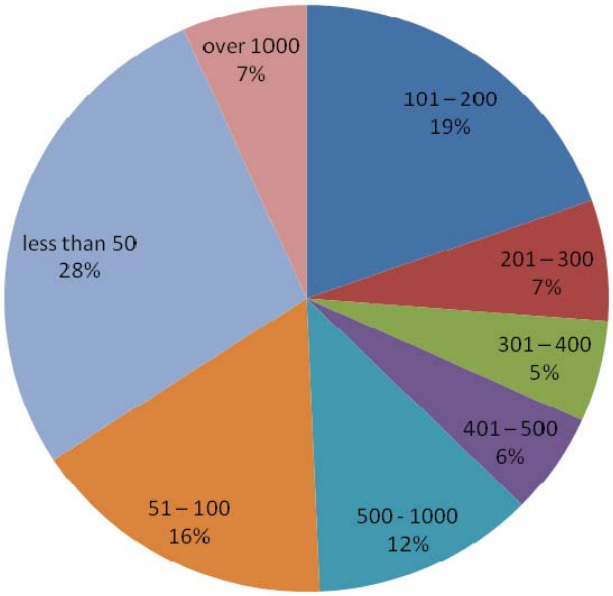


Figure 14: Number of people in department

The respondents were asked to indicate how many people were in their respective department 27% had less than 50 people, 20% had between 101 and 200 people, 17% had between 51 and 100, 11% had between 501 and 1000 people, 7% had between 201 and 300 people and also over 1000 people, 6% between 401 and 500 people while 5% were in department with between 301 and 400 people.

Use of computer application systems

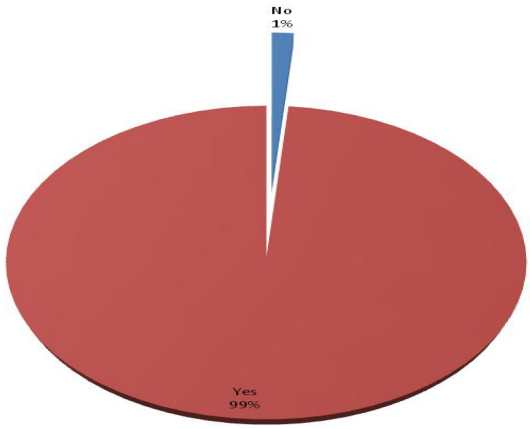


Figure 15: Use of computer application systems

On the adoption and use of ICT services offered by Computer application systems improving the performance of the airline 99% responded yes while 1% responded no. This indicated that use of computer application systems had an impact on the performance of the airline.

Support on computer application systems

Figure 16: Support on computer application systems

On getting support on need when using Computer application systems, 99% responded yes while 1% responded no. This indicated that support was readily available while using computer application systems.

Type of support on computer application systems

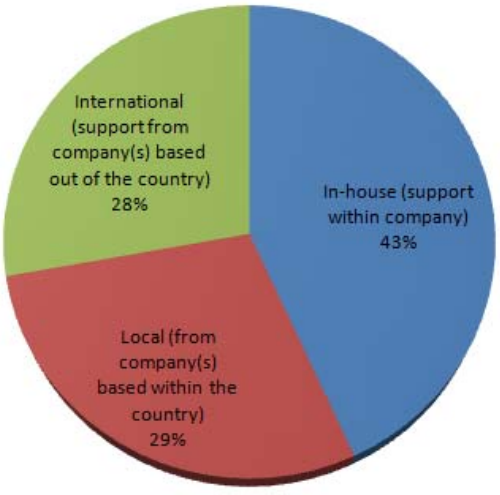


Figure 17: Type of support on computer application systems

On type of support received when using Computer application systems, 43% responded for in-house support, 29% responded for local support within the country and 28% responded for international support. Much support for computer application systems was from within the company (in-house)

Access to application systems modules

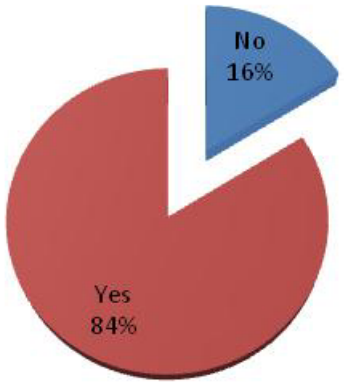


Figure 18: Access to application systems modules

On access to the computer application systems' modules (interfaces) needed for their daily work, 84% had access and 16% responded no.

Device for accessing Computer application systems

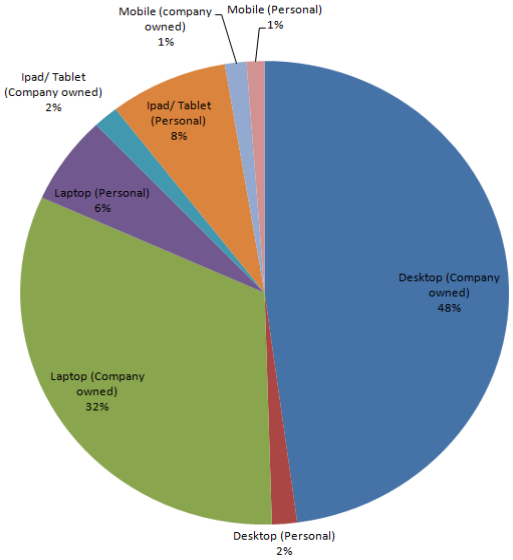


Figure 19: Device for accessing Computer application systems

The response on the devices used to access computer application systems, 48% used desktop computers provided by the company, 32% used Laptops provided by the company, 8% used personal Ipad/Tablet, 6% used personal Laptop, 2% used Ipad/Tablet provided by the company, 2% used personal desktop, 1% used company mobile phone and 1% used personal mobile phone.

Perception

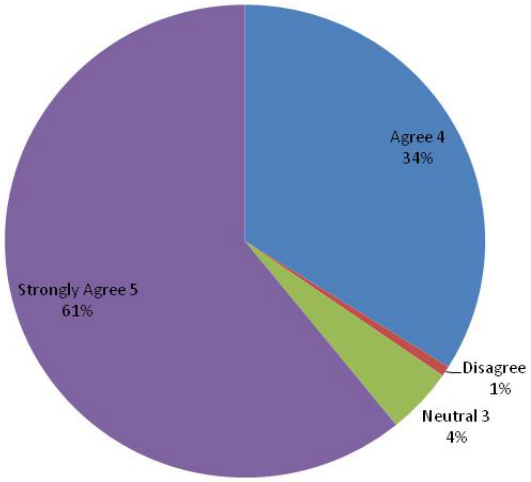


Figure 20: Fast computer application systems

Response on computer applications systems being fast, 61% strongly agreed, 34% agreed, 4% were neutral and 1% disagreed.

Motivation to use online applications

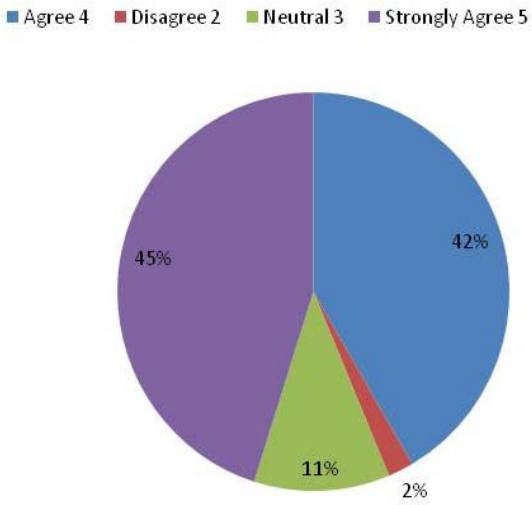


Figure 21: Motivation to use online applications

Response on motivation to use online computer applications systems, 45% strongly agreed, 42% agreed, 11% were neutral and 2% disagreed.

Encounter errors while using computer application systems

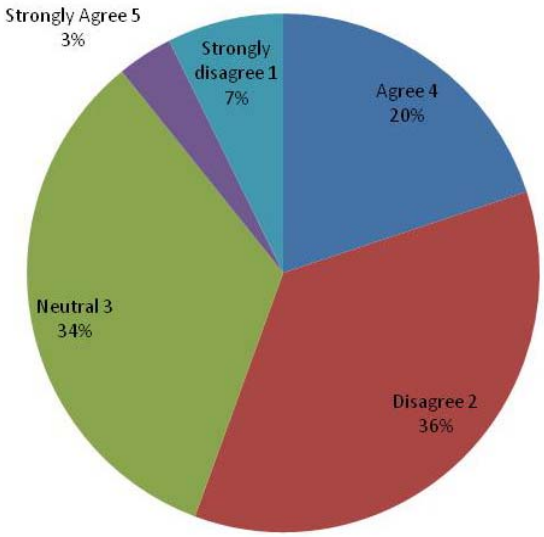


Figure 22: Encountering errors while using computer application systems

Response on users frequently encountering errors while working with computer applications systems was that, 3% strongly agreed, 20% agreed, 34% were neutral, 36% disagreed and 7% strongly disagreed.

Integration and data sharing

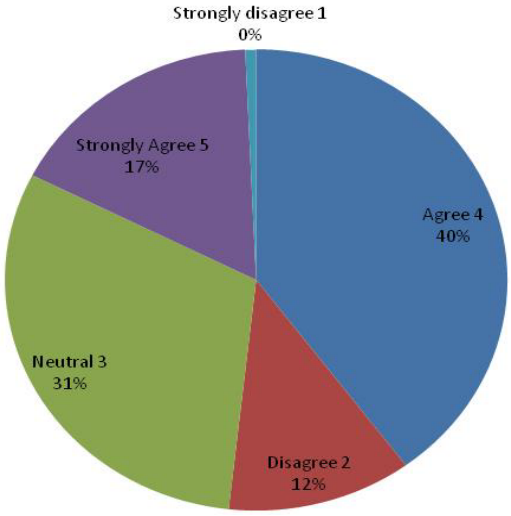


Figure 23: Integration and data sharing

Response on integration and computer applications sharing data was that, 17% strongly agreed, 40% agreed, 31% were neutral, 12% disagreed and 0% strongly disagreed.

Computer application systems version updates and patches application

	Percent	Valid Percent	Cumulative Percent
Not Sure	37.4	37.4	37.4
Daily	2.4	2.4	39.9
Weekly	9.1	9.1	49.0
Monthly	10.1	10.1	59.1
Quarterly	28.0	28.0	87.1
Other	12.9	12.9	100.0
Total	100.0	100.0	

Source: research data

Table 3: Systems version updates and patches application

Response on the frequency of new version update and application of patches was, 37.4% were not sure of the frequency, 28% responded quarterly, 10.1% responded monthly, 9.1% responded weekly, 12.9% indicated other while 2.4% responded daily.

Frequency of scheduled downtimes

	Percent	Valid Percent	Cumulative Percent
Not Sure	27.3	27.3	27.3
Daily	.7	.7	28.0
Weekly	15.7	15.7	43.7
Monthly	30.8	30.8	74.5
Quarterly	19.2	19.2	93.7
Other	6.3	6.3	100.0
Total	100.0	100.0	

Source: research data

Table 4: Frequency of scheduled downtimes

From the figure response on the frequency of planned downtimes was, 30.8% indicated monthly, 27.3% were not sure, 19.2% responded quarterly, 15.7% responded weekly, 6.3% indicated other

while 0.7% responded daily respectively. This implies most computer applications had monthly updates or patch application.

Frequency of non-scheduled downtimes

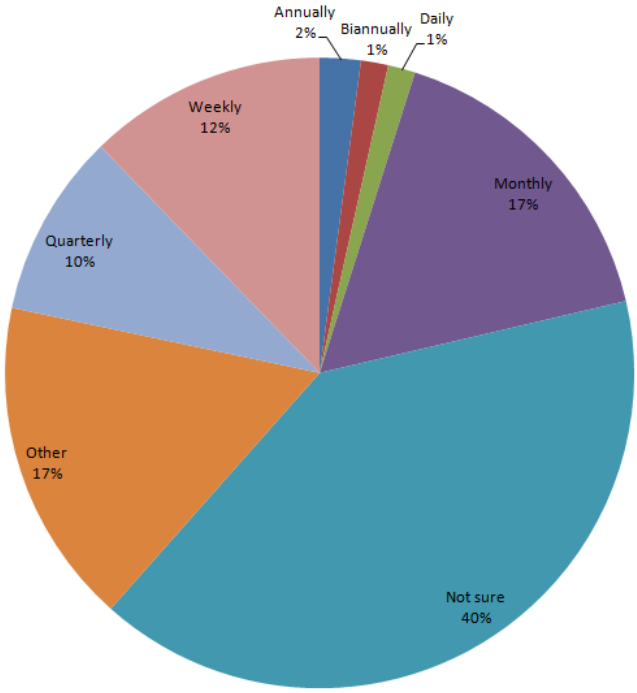


Figure 24: Frequency of non-scheduled downtimes

Response on the frequency of non-planned downtimes was, 40% were not sure, 17% responded monthly and other frequency respectively, 12% responded weekly, 10% responded quarterly, 2% responded annually while 1% responded biannually and daily respectively. This indicated majority of the respondents were not experiencing non-planned downtimes of computer application systems. Other options included rarely and none.

Fallback system/ manual process

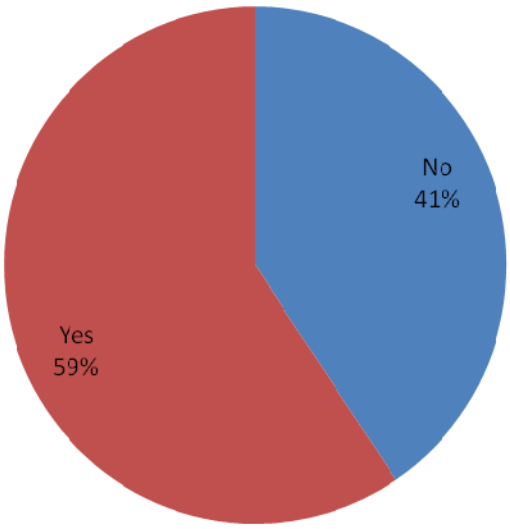


Figure 25: Fallback system/ manual process

Response on the availability of fall back system or manual process to use in case of computer application system outage was, 59% responded yes while 41% responded no.

Frequency of using manual fall back system/ process

	Frequency	Percent	Valid Percent	Cumulative Percent
Not Sure	101	45.9	45.9	45.9
Weekly	6	2.7	2.7	48.6
Monthly	26	11.8	11.8	60.5
Quarterly	26	11.8	11.8	72.3
Other	61	27.7	27.7	100.0
Total	220	100.0	100.0	

Source: Research data

Table 5: Frequency of using manual fall back system/ process

Of the respondents surveyed in this study on frequency of using the manual fallback system, 45.9% were not sure, 27.7% responded other frequency, 11.8% responded quarterly and monthly respectively and 2.7% responded weekly. This implies that majority of the respondents were not sure about the frequency of using the fallback system therefore not regularly used.

Reliability of power at work place

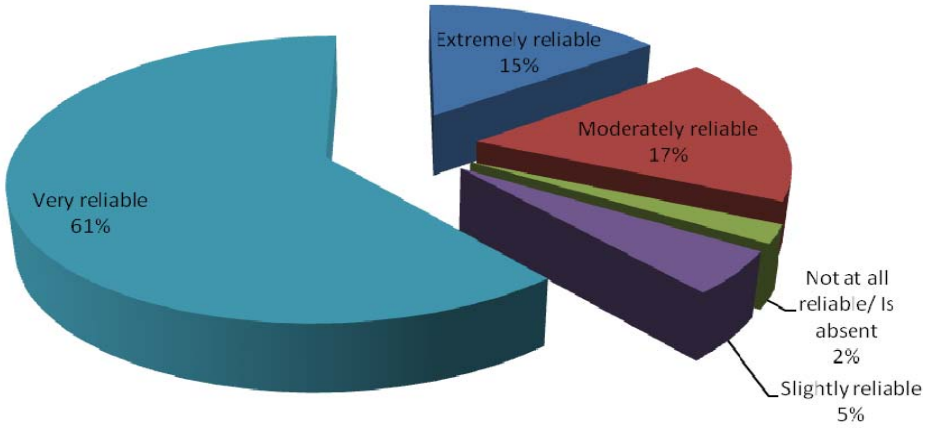


Figure 26: Reliability of power at work place

Response on the reliability of power was, 61% responded that power was very reliable, 17% responded moderately reliable, 15% responded extremely reliable, 5% responded slightly reliable while 2% responded not reliable. These results indicated that power was available to support computer application systems.

Computer related course training

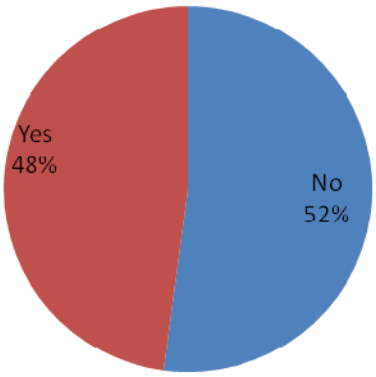


Figure 27: Computer related course training

Response on the attendance of IT related course lasting more than a week was, 52% responded no while 48% had attended an IT related course. These results indicated majority of the respondents had not attended an IT course lasting more than a week.

Computer application system course last six months

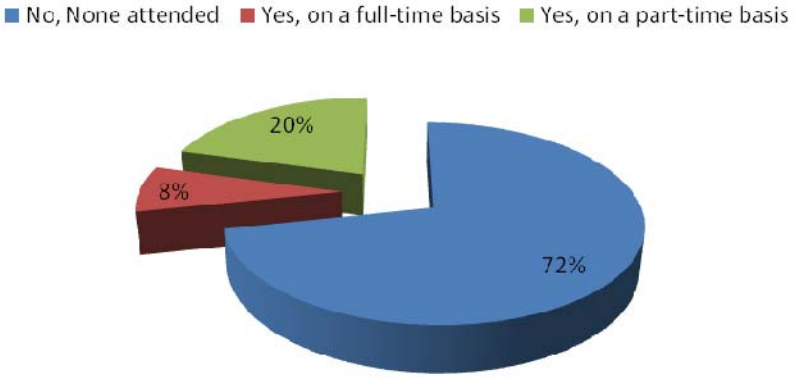


Figure 28: Computer application system course last six months

Response on the attendance of computer application system within the last six months was, 72% responded to have attended none, 20% responded to have attended on part time basis while 8% responded to have attended on full-time basis. These results indicated within a period of six months majority of the respondents had not attended formal computer application systems training an indicator of availability other learning options since technology keeps changing.

Intention to use computer application systems

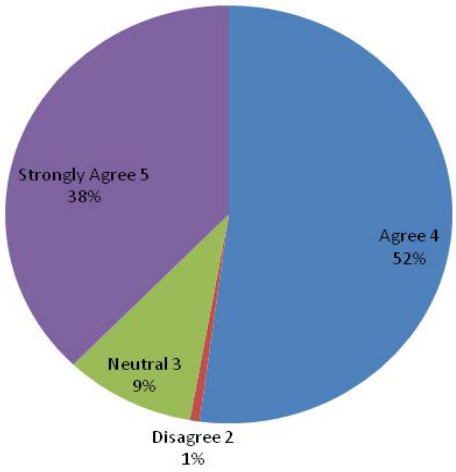


Figure 29: Intention to use computer application systems

Response on intention to use computer application when well informed, 52% agreed and 38% strongly agreed, 9 % responded neutral and 1% disagreed.

Being well informed about computer application systems

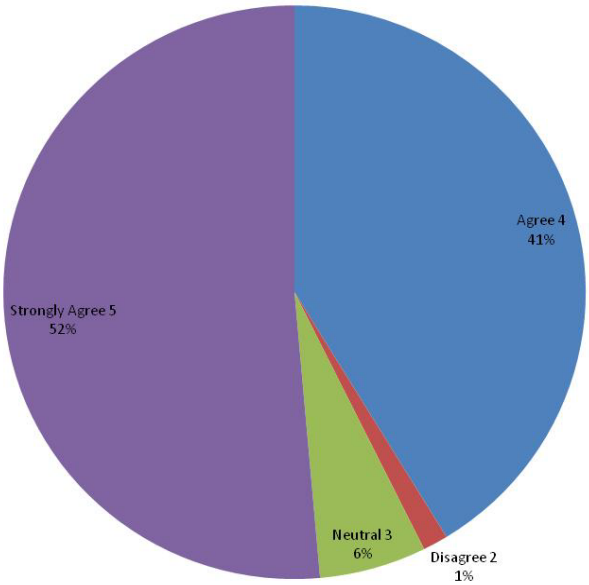


Figure 30: Being well informed about computer application systems

Response on being informed about availability and use, was that 51% agreed and 41% strongly agreed, 6 % remained neutral and 1% disagreed

Influence from important people

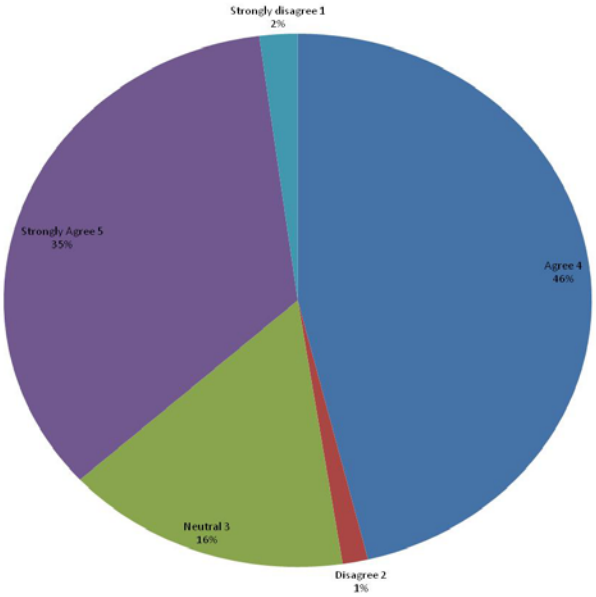


Figure 31: Influence from important people

Response on influence from important people was that 46% agreed and 35% strongly agreed, 16 % remained neutral, 1% disagreed and 2% strongly disagreed

Getting support

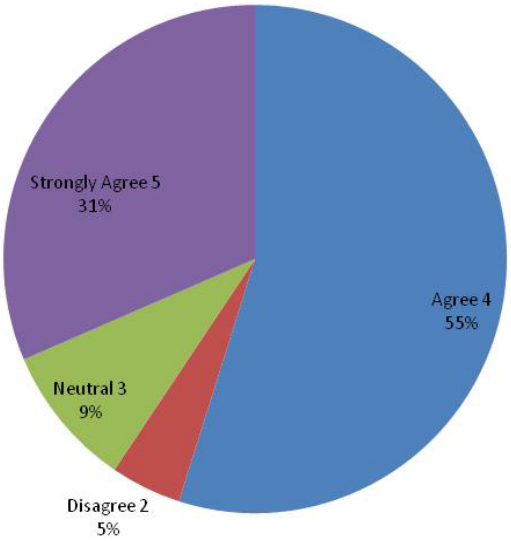


Figure 32: Getting support

Response on getting support on use of computer application systems was that 55% agreed and 31% strongly agreed, 9 % remained neutral and 5% disagreed

Accessing all information

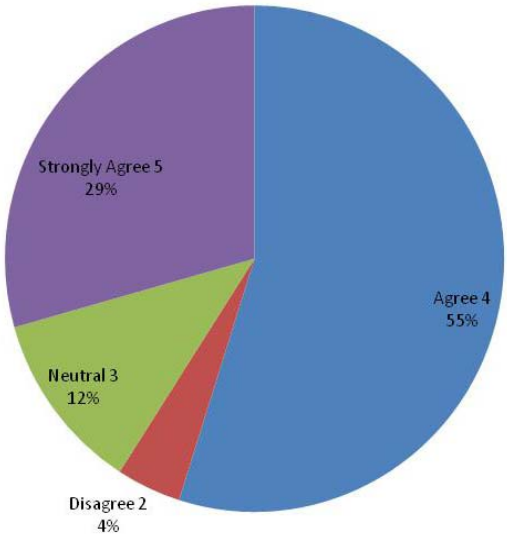


Figure 33: Accessing all information

Response on accessing all information needed was that 55% agreed and 29% strongly agreed, 12 % remained neutral and 4% disagreed

Enjoying information access using Computer application systems

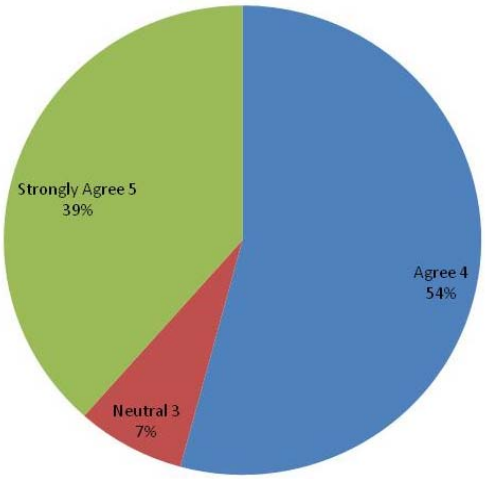


Figure 34: Enjoying information access

Response on enjoying access to information using computer application systems was that 54% agreed and 39% strongly agreed, 7 % remained neutral.

Ease of getting information

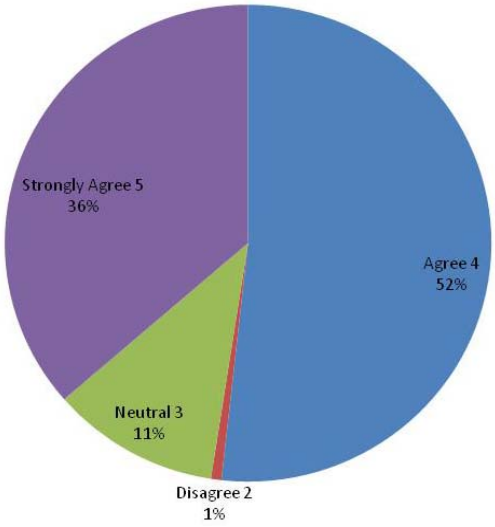


Figure 35: Ease of getting information

Response on ease of getting information needed was that 52% agreed and 36% strongly agreed, 11 % remained neutral and 1% disagreed

Fear of losing job

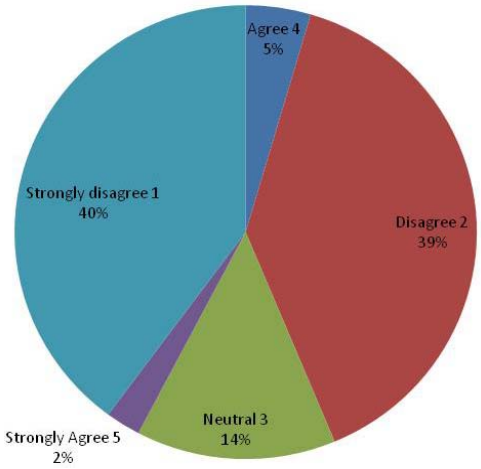


Figure 36: Fear of job lose

Response on fear of losing job due to automated processes by computer application systems was 40% strongly disagreed, 39% disagreed, 14 % remained neutral, 5% agreed and 2% strongly agreed.

Effect of use of computers on health

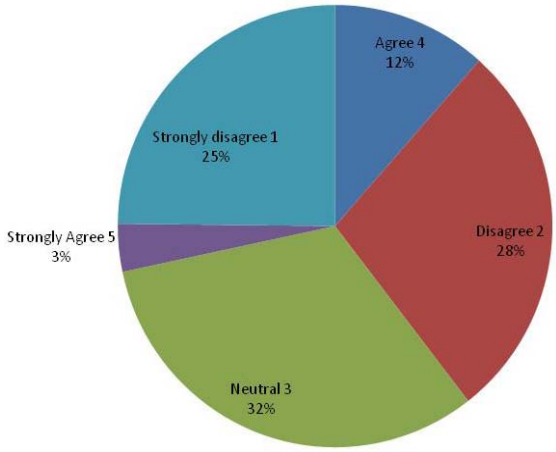


Figure 37: Effect on health

Response on computer devices affecting health was that 32% responded neutral, 28% disagreed, 25% strongly disagreed, 12 % agreed and 3% strongly agreed.

Computer applications being cost effective

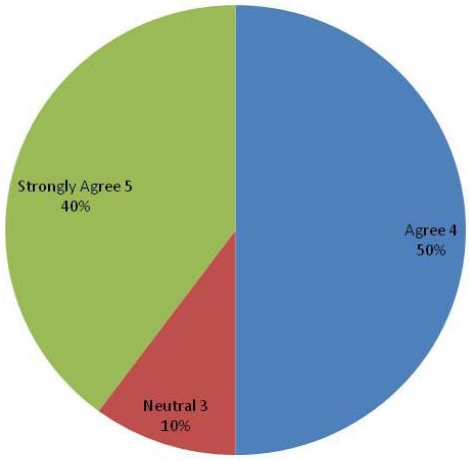


Figure 38: Computer application systems being cost effective

Response on using Computer application systems being cost effective for company, 50% agreed, 40% strongly agreed and 10% remained neutral, this implies computer application systems use is cost effective for the airline.

Computer applications having secure information

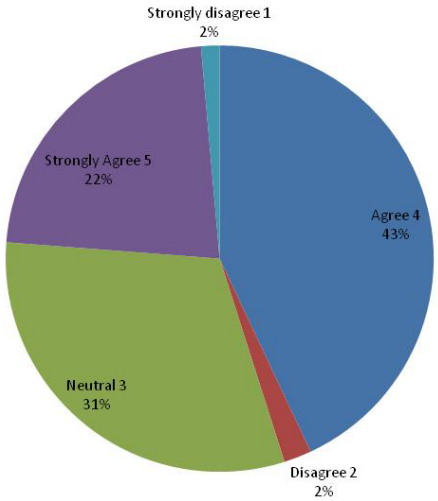


Figure 39: Computer applications having secure information

Response on financial information being secure was that, 43% agreed, 31% neutral,22% strongly agreed, 2% disagreed and 2% strongly disagreed which implies confidence of users on security of data held in computer application systems.

Using information for financial decision

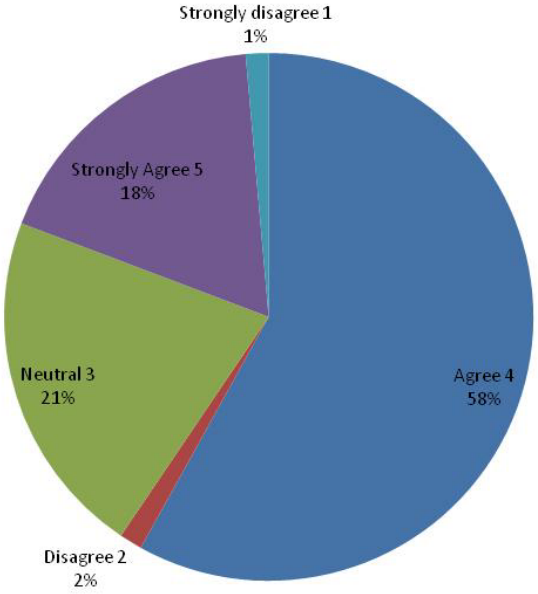


Figure 40: Using information for financial decision

Response on information for making financial decision being available, 58% agreed, 21% were neutral,18% strongly agreed, 1% disagreed and 1% strongly disagreed, this implies the usage of information held by computer application systems to make financial decision.

Usage of computer applications if cost is high

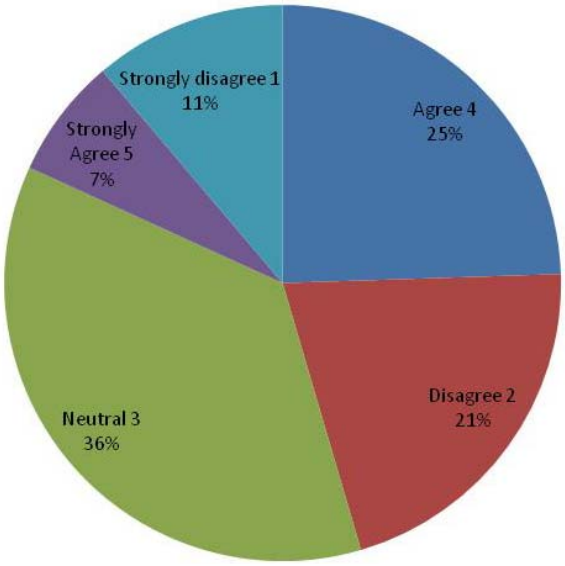


Figure 41: Computer application systems use if cost is too high

Response on not using computer application systems if cost is too high was, 36% were neutral, 25% agreed, 21% disagreed, 11% strongly disagreed and 7% strongly agreed, this implies that if the computer application systems cost is high, it will affect usage.

Usage of computer applications irrespective of cost

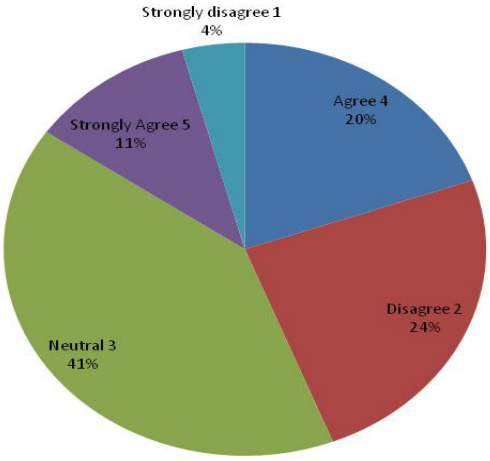


Figure 42: Computer application systems irrespective of cost

Response on using computer application systems irrespective of the cost was, 41% were neutral, 24% disagreed, 20% agreed, 11% strongly agreed and 4% strongly disagreed, this indicated an effect of cost since most respondents either remained neutral or were to consider cost.

Modules or interfaces availability

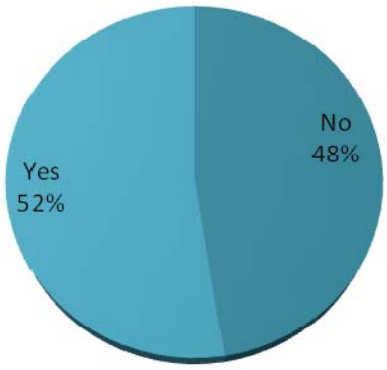


Figure 43: Modules or interfaces availability

Response on modules or interfaces which would be of importance being blocked since they are not subscribed for as part of license was that, 54% responded yes and 48% responded no.

Forms of money transfer supported in computer application system

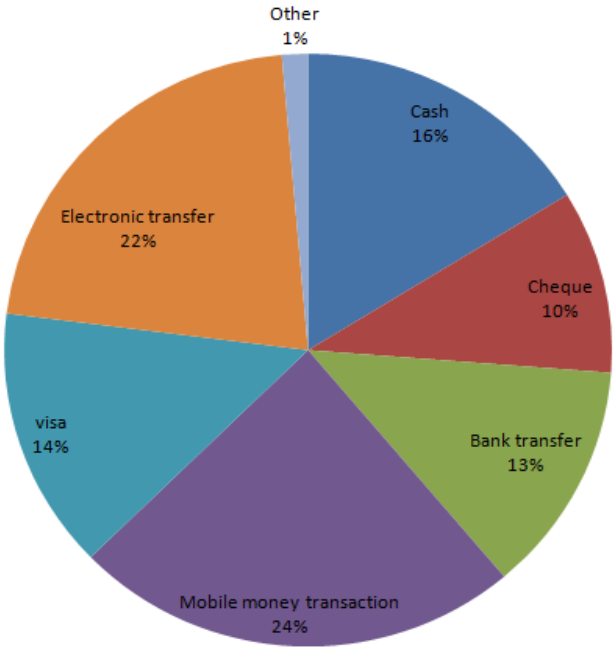


Figure 44: Forms of money transfer supported

Response on the form of money transfer supported by the computer application system for transactions between the company and the customers and service providers was that, cash 16%, cheque 10%, bank transfer 13%, electronic transfer 22%, mobile money 24%, visa 14% while others were 1%, this implies most computer application systems supported electronic and mobile money transfer therefore computer application system handling most of the financial transaction.

Current infrastructure in the company support on electronic money transfer

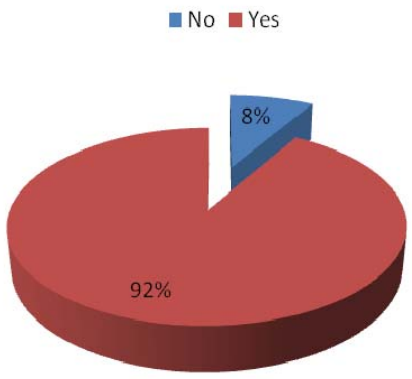


Figure 45: Infrastructure support of electronic money transfer

Response on company infrastructure support of electronic money transfer was that 92% responded yes while 8% responded no, this implies the infrastructure supports computer application systems handling of electronic and mobile money transfer.

Company ICT policy

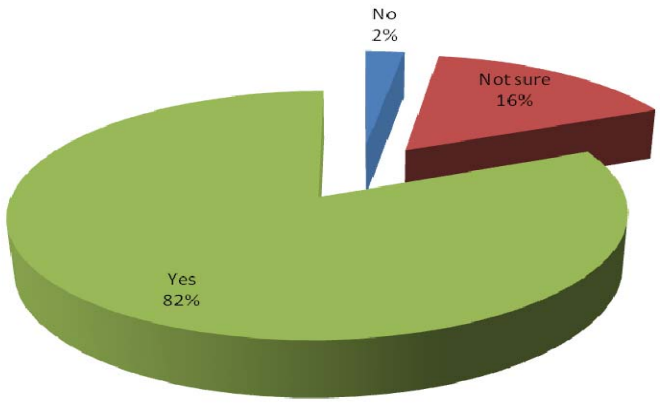


Figure 46: Company ICT policy

Response on availability of company ICT policy was that, 82% responded yes, 2% responded no while 16% responded not sure. This implies availability of ICT policy to guide the operation of computer application systems.

Staff in your company

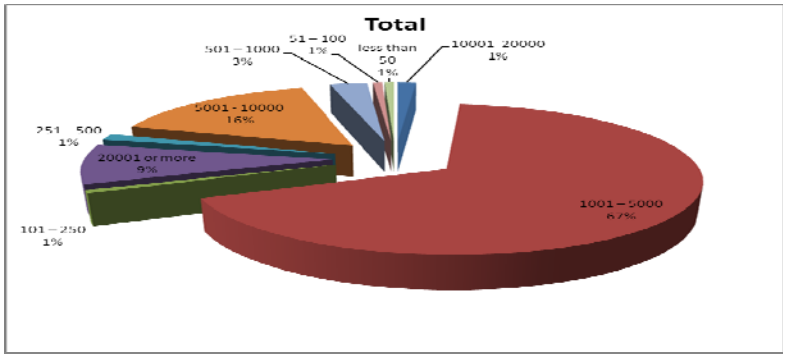


Figure 47: Number of people in company

Response on number of staff in the company was that 67% of the respondents had between 1001 – 5000 and the least being less than 500 people.

Reporting line of head of IT department

	Frequency	Percent	Valid Percent	Cumulative Percent
Chief Executive Officer	259	90.6	90.6	90.6
Chief Finance Officer	21	7.3	7.3	97.9
Other	6	2.1	2.1	100.0
Total	**286**	**100.0**	**100.0**	

Source: Research data

Table 6: Reporting line of head of IT department

On awareness of the IT organizational structure, 90% of the respondents surveyed in this study indicated that the head of IT department reported to Chief executive officer, 7% chief finance officer while 2% responded others.

4.3 Results analysis

Paired Samples Test					
		Paired Differences	t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference			
		Upper			
Pair 1	Utilization score - Perceptions	-2.55574	-12.621	285	.000
Pair 2	Utilization score - Financial sector development	.41709	.000	285	1.000
Pair 3	Utilization score - Application Efficiency	3.19509	16.237	285	.000
Pair 4	Utilization score - Awareness	5.66228	26.387	285	.000

Source: Research data
Table 7: Paired sample tests

4.3.1: Perceived ease of use

Utilization score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	488.055	14	34.861	4.368	.000
Within Groups	2162.813	271	7.981		
Total	2650.867	285			

Source: Research data
Table 8: ANOVA on perceived ease of use

Based on Table 7 of paired samples we can conclude that, perception has a significance of 0.000. The ANOVA results in Table 8 (F= 4.368; df = 14; p = 0.000) showed that the observed mean difference in computer application systems utilization score was significant at 0.00 level of significance. We therefore reject the null hypothesis that there is no significant difference between Computer application systems utilization and perceived ease of use.

Therefore H1 is supported.

4.3.2: Perceived usefulness

Utilization score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	209.226	11	19.021	2.134	.018
Within Groups	2441.641	274	8.911		
Total	2650.867	285			

(F= 2.134; df = 11; p = 0.018) Source: Research data

Table 9: ANOVA on perceived usefulness

The ANOVA results from table 9 (F= 2.134; df = 11; p = 0.018) showed that the observed mean difference in computer application systems utilization score was significant at 0.018 level of significance. We therefore reject the null hypothesis that there is no significant difference between computer application systems utilization and perceived usefulness.

Therefore H2 is supported.

4.3.3: Awareness

Based on Table 7 of paired samples we can conclude that on pairing awareness with utilization the significance is 0.000. We therefore reject the null hypothesis that there is no significant difference between Computer application systems utilization and awareness.

Therefore H3 is supported.

Based on Table 7 of paired samples we can conclude that on pairing financial sector development with utilization the significance is 1.000. We therefore support the null hypothesis that there is no significant difference between Computer application systems utilization and financial sector development.

On pairing application efficiency with utilization the significance is 0.000. We therefore reject the null hypothesis that there is no significant difference between Computer application systems utilization and application efficiency.

Therefore H4 is partially supported and rejected

4.3.4: Utilization of computer systems and intervening variables

The utilization of computer systems often varies by a number of intervening variables. In this study focus was given to gender, department.

4.3.4 a Gender and utilization of Computer application systems

Gender is an important determinant in human behaviour patterns and decision making. The results in Table 10 indicate that male workers reported a higher mean score on Computer application systems utilization as compared to their female counterparts.

	N	Mean	Std. Deviation
1 Male	148	18.4527	3.12187
2 Female	138	17.6449	2.92435
Total	286	18.0629	3.04980

(F= 5.081; df = 1; p = 0.025) Source: Research data

Table 10: Mean score on utilization of computer application systems and gender

The ANOVA results in Appendix III, table R12 (F= 5.081; df = 1; p = 0.025) showed that the observed mean difference in Computer application systems utilization score was significant at 0.05 level of significance. This therefore means that male workers significantly utilize Computer application systems than their female counterparts. We therefore reject the null hypothesis that there is no significant difference between Computer application systems utilization and intervening variables for gender.

4.3.4 b Department and utilization of Computer application systems

Departmental variations in adoption and use of technology are a common feature in organization behaviour. The results in Table 11 indicate that Information Technology department had the highest mean score on the utilization of Computer application systems followed by Human Resource, Other departments, Ground Services, Flight operations, Finance, Commercial, and Engineering in that order.

Department	N	Mean	Std. Deviation
Finance	42	17.0000	3.40731
Commercial	40	16.9500	2.14775
Ground Services	51	18.5686	2.70004
Information Technology	29	21.1379	2.37132
Engineering	53	16.8491	2.47601
Human Resources	8	19.5000	4.44008
Flight Operations	27	18.0370	2.47264
Others	36	18.8333	3.19374
Total	286	18.0629	3.04980

Source: Research data

Table 11: Mean score on utilization of computer application systems and departments

The ANOVA results in Appendix III, table R13 ($F= 9.238$; $df = 7$; $p = 0.000$) results showed that the observed mean variations in the utilization of Computer application systems by department was significant at 0.05 level of significance. This therefore means that there was a significant variation in utilization of Computer application systems with IT department having the highest utilization. We therefore reject the null hypothesis that there is no significant relationship between the intervening variable and the utilization of Computer application systems.

Therefore H5 is supported.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings as discussed in chapter four and interpretations of the data analysis, conclusions and recommendations based on the findings.

5.2 Summary of findings, discussion and recommendations

The study found that the adoption and use of ICT services offered by computer application systems have improved the performance of the airline; this was confirmed by both the male and the female respondents who registered 98% agreement. The study found that particular external variables which were predictors of perceived usefulness and perceived ease of use demonstrated predictive power the same as discovered by (Miller, J. and Khera, O. 2010) however one study found perceived ease of use to be a predictor of technology adoption superior to perceived usefulness (Brown, 2002), findings similar to ours where perceived ease of use had a high level of significance as compared to perceived usefulness (Brown, 2002).

From the study male workers significantly utilize Computer application systems than their female counterparts which is different from the findings by Bugembe,(2010) where female ranked highest as compared to the male counterparts however there was no significant difference across groups on actual usage. This factor however should be considered when deploying computer application systems and designing training needs.

From the study awareness being created through regular training both on IT and on computer application systems has an effect on use of computer application systems. Accordingly it is of

great importance to offer extensive training to staff regularly to build confidence in utilizing the computer application systems. This is similar to the findings by Brown, (2002) that when implementing the systems, training and support should aim to increase confidence in ability to use the system on their own and reduce level of anxiety.

5.3 Conclusion of study

From the study we can conclude that computer application systems positively help improve operation of the airline and improve on efficiency. This is reflected by employees view on using computer application systems and has a direct effect on the utilization. Computer application systems are viewed as enablers and not threats.

This study have also proved the applicability of TAM as a way of providing airline managers who need to assess the likelihood of success for the new technology introductions and help them understand the drivers of acceptance. Through this they can focus on different external variables and proactively design interventions targeted at enabling acceptance and utilization of computer application systems continuously.

5.4 Areas for further research

This study provided a foundation for further research. The following are some recommendations:

Conducting a follow up study with a larger sample size of more airlines that would validate the results for reliability as well as exploring other factors of influence.

To conduct the study focusing on specific applications by department and investigate the factors affecting the staff actual use of computer applications and also to verify the moderating influence of experience on computer application system utilization.

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APPENDICES

APPENDIX I: INTRODUCTORY LETTER

Dear Respondent,

RE: RESEARCH DATA COLLECTION

I am a postgraduate student at the University of Nairobi pursuing a Master of Science degree in Information System. I am currently collecting data for my research project titled:

Investigating factors affecting utilization of computer application systems in service sector based on Technological Acceptance model: a case study of Kenya Airways Limited.

You have been selected to participate in this study and I would highly appreciate if you kindly read the accompanying instructions and respond to all questions in the attached questionnaire as completely, correctly and honestly as possible.

The information provided will be treated with strict confidentiality and will be used only for research purposes of this study.

Thank you in advance for your co-operation.

Yours Faithfully,

Eric Omondi Otieno

P56/72528/2012

Researcher

APPENDIX II: AIRLINE EMPLOYEE STRUCTURED QUESTIONNAIRE

UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

INVESTIGATING FACTORS THAT AFFECT UTILIZATION OF COMPUTER APPLICATION SYSTEM IN THE SERVICE SECTOR, A CASE STUDY.

Confidentiality: All the information required by this questionnaire will be used for academic research purposes only.

Instructions:

- Please do not write your name
- Feel free to ask for any clarification ()
- Please indicate the appropriate option by a tick to the left of your choice e.g. [√] my choice
- Kindly answer the questions honestly, accurately and accordingly.

PART A: BACKGROUND INFORMATION

Respondent's profile

1. What is your gender? [ ] Male [ ] Female

2. In which of the following age brackets do you belong.

   [ ] Below 20 years [ ] 21-30 years [ ] 31-40 years
   [ ] 41-50 years [ ] 51 years and above

3. What is your level of education? (State the highest level)

   [ ] Certificate [ ] Diploma [ ] Undergraduate

   [ ] Postgraduate (Masters) [ ] Postgraduate (PhD) [ ] Other _____

4. How many years have you worked with the company?

[ ] Less than 1 year [ ] 1-3 Years [ ] 4 – 7 Years [ ] 8-11 years

[ ] Over 11 years

5. Which department are you in?

[ ] Finance [ ] Commercial [ ] Ground services [ ] IT [ ]Engineering

[ ] Human resource [ ] Flight Operations [ ] Other _____

6. Do you have the following computer skills and how do you rate them?

	Excellent 5	Good 4	Fair 3	Poor 2	Very poor 1
Basic computer usage					
Internet usage					
Office application packages: Word processing e.g Ms Word etc, Spreadsheet e.g. Ms Excel etc, Presentations e.g. Ms Power point etc, Database applications e.g. Ms Access etc					
Computer maintenance e.g. basic repairs					
Computer programming					

7. How many people are in your department?

[ ] less than 50 [ ] 51 – 100 [ ] 101 – 200 [ ] 201 – 300

[ ] 301 – 400 [ ] 401 – 500 [ ] 501 - 1000 [ ] over 1000

PART B: FACTORS AFFECTING UTILIZATION OF COMPUTER APPLICATION SYSTEMS

8. In your opinion has the adoption and use of ICT services improved the performance of the airline? [ ] Yes [ ] No

9. Do you get support on computer application systems when needed? [ ] Yes [ ] No

10. What type of support do you get?

[ ] Local [ ] International [ ] In-house (in office) [ ] All the above

[ ] None [ ] Other _____

11. Do you have access to all the computer application systems' modules (interfaces) you need for your daily work? [ ] Yes [ ] No

12. What device do you use to access the Computer applications (choose all that apply and indicate if it is company owned (provided by company) or private (personal)

Device	**Company owned**	**Personal**
[ ] Desktop computer	[ ]	[ ]
[ ] Laptop	[ ]	[ ]
[ ] Ipad or Tablet	[ ]	[ ]
[ ] Other _____	[ ]	[ ]

13. To what extent do you agree with the following statements?

	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
I use computer application systems to access information because it is faster					
I am motivated to use web based computer application systems online because they					

are easily accessible over internet.					
I encounter errors frequently while working using computer application systems					
I can access data from one computer application using another computer application without having to enter the same data in the different applications					

14. How frequently is your computer application system updated? (Application of patches or new versions.)

    [ ] Daily [ ] Weekly [ ] Monthly [ ] Quarterly

    [ ] Annually [ ] Biannually [ ] Other _____

15. How frequently do you experience planned (scheduled) computer application systems downtime?

    [ ] Daily [ ] Weekly [ ] Monthly [ ] Quarterly

    [ ] Annually [ ] Biannually [ ] Other _____

16. How frequently do you experience un planned (non-scheduled/emergency) computer application systems downtime?

    [ ] Daily [ ] Weekly [ ] Monthly [ ] Quarterly

    [ ] Annually [ ] Biannually [ ] Other _____

17. Do you have a manual fall back process in place to use in case of computer application system failure?

    [ ] Yes [ ] No

18. How frequently do you use the manual fallback process?

    [ ] Weekly [ ] Monthly [ ] Quarterly

    [ ] Annually [ ] Biannually [ ] Other _____

19. Kindly describe the reliability of power connection /electricity at your work place in the last 6 months.

    [ ] Not at all reliable/ Is absent [ ] Slightly reliable [ ] Moderately reliable

    [ ] Very reliable [ ] Extremely reliable

20. Have you ever attended a computer or IT related course lasting one week or more than a week?

[ ] Yes [ ] No

21. Have you been to school or attended any formal learning course in computer application system in your organization during the last 6 months?

[ ] Yes, on a full-time basis [ ] Yes, on a part-time basis

[ ] No, None attended

22. On a scale of one to five, where; 5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 =Disagree and 1 = Strongly Disagree, please indicate your level of agreement to the statements below;

Awareness	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
I intend to use a computer application system to capture, process and access information since I am well informed about the functionalities.					
I would like to be well informed about the availability and use of computer application systems to capture, process and access information.					
People who are important to me think I should use computer application systems for my work.					

23. On a scale of one to five, where; 5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly Disagree, please indicate your level of agreement to the issues below;

Perception	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
I use computer application systems for my work because I get support whenever I am stuck.					
When I use computer application systems, I am able to get all the information that I need.					
Using computer application systems to access information is enjoyable to me.					
Getting information that I need through the computer application systems is easy for me.					
I fear losing my job due to computer application systems automated processes.					
Use of computer and other electronic devices will affect my health.					

24. On a scale of one to five, where; 5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly Disagree, please indicate your level of agreement to the issues below;

Financial sector developments	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
I use computer application systems for capturing, processing and accessing information because it is cost effective for the company.					
I use computer application system for capturing, processing and accessing financial information because the transaction is secure.					
Computer application systems provide most information for making financial decisions.					
I will not use computer application systems for accessing and processing information if the cost is high.					
I will use computer application systems to access information irrespective of the cost.					

25. Are some modules or interfaces which would be of importance to your work blocked since they are not paid for as part of license? (For the main computer application system you use)

[ ] Yes [ ] No

26. Which form of money transfer is supported in the computer application system for transactions between your company and the customers and also other service providers?

[ ] Cash [ ] Cheque [ ] Bank transfer [ ] Electronic transfer

[ ] Mobile money transaction [ ] visa [ ] other _____

27. Does the company policy supports cashless money transaction? [ ] Yes [ ] No

28. Does the current infrastructure in the company supports electronic money transfer

[ ] Yes [ ] No

29. Do you have a company ICT policy in place? [ ] Yes [ ] No [ ] Not sure

30. How many people are in your company?

[ ] less than 50 [ ] 51 – 100 [ ] 101 – 250 [ ] 251 – 500

[ ] 501 – 1000 [ ] 1001 – 5000 [ ] 5001 - 10000 [ ] 10001- 20000

[ ] 20001 or more

33. Where does the head of IT department directly report to?

Reporting structure	**Please tick**
Chief executive officer/ Managing director	
Chief finance officer/ Head of finance	
Other: _____	

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX III: RELIABILITY DATA

Reliability

Scale: Reliability Scale

Case Processing Summary

		N	%
Cases	Valid	286	100.0
	Excluded[a]	0	.0
	Total	286	100.0

a. Listwise deletion based on all variables in the procedure.

Table R1: case processing source, research data

Reliability Statistics

Cronbach's Alpha	N of Items
.756	5

Table R2: reliability statistics Source, research data

From Table R2 above the chronbach alpha of 0.756 is an indication of internal consistency from the set of questions.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@6. Do you have the following computer skills and how do you rate them? [Basic computer usage]	13.43	7.537	.492	.736
@6. [Internet usage]	13.48	7.317	.577	.717
@6.[Office application packages: Word processing ,Spreadsheet ,Presentations ,Database applications]	13.88	6.554	.533	.711

Table R3: analysis basic usage Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@6. Do you have the following computer skills and how do you rate them? [Computer maintenance e.g. basic repairs]	15.42	5.017	.600	.692
@6. Do you have the following computer skills and how do you rate them? [Computer programming]	16.04	5.153	.588	.696

Table R4: analysis computer skills Source, research data

From Tables above The correlation of individual items with the total is above threshold of 0.3 confirming the items are closely related to test computing skills form a set which can gauge computing skills for individual.

All items appear to be worthy of retention in the set of constructs because for all the items chronbach alpha does not increase if each item is deleted one at a time while computing the chronbach alpha.

T-Test

Group Statistics

	@1. What is your gender?	N	Mean	Std. Deviation
Utilization score	1 Male	148	18.4527	3.12187
	2 Female	138	17.6449	2.92435

Table R5: gender statistics Source, research data

Group Statistics

	@1. What is your gender?	Std. Error Mean
Utilization score	1 Male	.25662
	2 Female	.24894

Table R6: gender utilization Source, research data

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	t
Utilization score	Equal variances assumed	.154	.695	2.254
	Equal variances not assumed			2.259

Table R7: sample tests Source, research data

Independent Samples Test

		t-test for Equality of Means		
		df	Sig. (2-tailed)	Mean Difference
Utilization score	Equal variances assumed	284	.025	.80778
	Equal variances not assumed	283.993	.025	.80778

Table R8: independent sample test significance Source, research data

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Utilization score	Equal variances assumed	.35834	.10243	1.51312
	Equal variances not assumed	.35752	.10405	1.51150

Table R9: independent sample test confidence Source, research data

Oneway

Descriptives

Utilization score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1 Male	148	18.4527	3.12187	.25662	17.9456	18.9598
2 Female	138	17.6449	2.92435	.24894	17.1527	18.1372
Total	286	18.0629	3.04980	.18034	17.7080	18.4179

Table R10: one way gender utilization score Source, research data

Descriptives

Utilization score

	Minimum	Maximum
1 Male	10.00	25.00
2 Female	13.00	25.00
Total	10.00	25.00

Table R11: gender utilization score Source, research data

ANOVA

Utilization score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	46.597	1	46.597	5.081	.025
Within Groups	2604.270	284	9.170		
Total	2650.867	285			

Table R12: ANOVA Source, research data

From tables R11 and R12 above, Based on gender, utilization by males and females is different, as indicated by p value which is less than 0.05

Descriptives

Utilization score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	42	17.0000	3.40731	.52576	15.9382	18.0618	10.00	25.00
2	40	16.9500	2.14775	.33959	16.2631	17.6369	13.00	21.00
3	51	18.5686	2.70004	.37808	17.8092	19.3280	13.00	25.00
4	29	21.1379	2.37132	.44034	20.2359	22.0399	16.00	25.00
5	53	16.8491	2.47601	.34011	16.1666	17.5315	13.00	22.00
6	8	19.5000	4.44008	1.56980	15.7880	23.2120	15.00	25.00
7	27	18.0370	2.47264	.47586	17.0589	19.0152	15.00	24.00
8	36	18.8333	3.19374	.53229	17.7527	19.9139	14.00	25.00
Total	286	18.0629	3.04980	.18034	17.7080	18.4179	10.00	25.00

ANOVA

Utilization score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	500.254	7	71.465	9.238	.000
Within Groups	2150.613	278	7.736		
Total	2650.867	285			

Table R13: ANOVA based on department utilization

From tables R13 above, Based on department, utilization varies based is different, as indicated by p value which is less than 0.05

Reliability

Scale: Reliability Scale

Case Processing Summary

		N	%
Cases	Valid	286	100.0
	Excluded[a]	0	.0
	Total	286	100.0

a. Listwise deletion based on all variables in the procedure.

Table R14 Source, research data

Reliability Statistics

Cronbach's Alpha	N of Items
.474	3

Table R15: Chronbach alpha

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@22.On a scale of one to five, please indicate your level of agreement to the statements below; [I intend to use a computer application system to capture, process and access information since I am well informed about the functionalities.]	8.52	1.499	.274	.412

Table R16: Item statistics Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@22. On a scale of one to five, please indicate your level of agreement to the statements below; [I would like to be well informed about the availability and use of computer application systems to capture, process and access information.]	8.37	1.405	.323	.334
@22. On a scale of one to five, , please indicate your level of agreement to the statements below; [People who are important to me think I should use computer application systems for my work.]	8.70	1.083	.304	.378

Table R17: analysis Source, research data

From Table R16, R17 above, a few more items to added to test awareness based on the Chronbach alpha which is low.

Reliability

Scale: Reliability Scale

Case Processing Summary

		N	%
Cases	Valid	286	100.0
	Excluded[a]	0	.0
	Total	286	100.0

a. Listwise deletion based on all variables in the procedure.

Table R18: case summary Source, research data

Reliability Statistics

Cronbach's Alpha	N of Items
.551	6

Table R19: chronbach's alpha Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@23.On a scale of one to five, please indicate your level of agreement to the issues below; [I use computer application systems for my work because I get support whenever I am stuck.]	16.96	5.528	.402	.459

Table R20: Item analysis on support Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@23. On a scale of one to five, please indicate your level of agreement to the issues below; [When I use computer application systems, I am able to get all the information that I need.]	17.00	5.211	.507	.410

Table R21: Item analysis information access Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@23. On a scale of one to five, please indicate your level of agreement to the issues below; [Using computer application systems to access information is enjoyable to me.]	16.78	5.878	.441	.461

Table R22: Item analysis enjoyment Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@23On a scale of one to five, please indicate your level of agreement to the issues below; [Getting information that I need through the computer application systems is easy for me.]	16.85	6.013	.325	.497

Table R23: Analysis ease of access Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@23. On a scale of one to five, please indicate your level of agreement to the issues below; [I fear losing my job due to computer application systems automated processes.]	19.19	5.752	.182	.569
@23. On a scale of one to five, please indicate your level of agreement to the issues below; [Use of computer and other electronic devices will affect my health.]	18.68	5.804	.103	.628

Table R24: Analysis job and health Source, research data

Reliability

Scale: Reliability Scale

Reliability Statistics

Cronbach's Alpha	N of Items
.348	5

Table R25: chronbach's alpha Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@24.On a scale of one to five, please indicate your level of agreement to the issues below; [I use computer application systems for capturing, processing and accessing information because it is cost effective for the company.]	13.77	4.082	.367	.184

Table R26: analysis cost Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@24. On a scale of one to five, please indicate your level of agreement to the issues below; [I use computer application system for capturing, processing and accessing financial information because the transaction is secure.]	14.23	3.338	.450	.050

Table R27: analysis financial information Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@24. On a scale of one to five, please indicate your level of agreement to the issues below; [Computer application systems provide most information for making financial decisions.]	14.17	3.481	.501	.044

Table R28: Analysis information use Source, research data

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
@24. On a scale of one to five, please indicate your level of agreement to the issues below; [I will not use computer application systems for accessing and processing information if the cost is high.]	15.11	4.928	-.137	.590
@24. On a scale of one to five, please indicate your level of agreement to the issues below; [I will use computer application systems to access information irrespective of the cost.]	14.97	4.448	-.012	.470

Table R29: analysis high cost Source, research data

From figure above, both last items on cost if removed affect the Chronbach alpha and can be replaced or review in future.

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
Utilization score	18.0629	3.04980	286
Awareness	12.7937	1.53877	286
Perceptions	21.0909	2.74382	286
Financial sector development	18.0629	2.33424	286
Application Efficiency	15.2133	1.86189	286

Table R30: correlation Source, research data

Correlations

		Utilization score	Awareness	Perceptions
Utilization score	Pearson Correlation	1	.028	.022
	Sig. (2-tailed)		.635	.712
	N	286	286	286
Awareness	Pearson Correlation	.028	1	.304**
	Sig. (2-tailed)	.635		.000
	N	286	286	286
Perceptions	Pearson Correlation	.022	.304**	1
	Sig. (2-tailed)	.712	.000	
	N	286	286	286
Financial sector development	Pearson Correlation	.134*	.361**	.473**
	Sig. (2-tailed)	.023	.000	.000
	N	286	286	286
Application Efficiency	Pearson Correlation	.349**	.302**	.275**
	Sig. (2-tailed)	.000	.000	.000
	N	286	286	286

Table R31: correlations comparison Source, research data

Correlations

		Financial sector development	Application Efficiency
Utilization score	Pearson Correlation	.134	.349
	Sig. (2-tailed)	.023	.000
	N	286	286
Awareness	Pearson Correlation	.361	.302
	Sig. (2-tailed)	.000	.000
	N	286	286
Perceptions	Pearson Correlation	.473	.275**
	Sig. (2-tailed)	.000	.000
	N	286	286
Financial sector development	Pearson Correlation	1*	.201**
	Sig. (2-tailed)		.001
	N	286	286
Application Efficiency	Pearson Correlation	.201**	1**
	Sig. (2-tailed)	.001	
	N	286	286

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table R32: relations among variables Source, research data

From tables above, there is a high linear relationship between perception, awareness and financial sector developments respectively with utilization score, which is depicted on the positive correlations between respective two variables.

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Utilization score	18.0629	286	3.04980	.18034
	Perceptions	21.0909	286	2.74382	.16225
Pair 2	Utilization score	18.0629	286	3.04980	.18034
	Financial sector development	18.0629	286	2.33424	.13803
Pair 3	Utilization score	18.0629	286	3.04980	.18034
	Application Efficiency	15.2133	286	1.86189	.11010
Pair 4	Utilization score	18.0629	286	3.04980	.18034
	Awareness	12.7937	286	1.53877	.09099

Table R33: paired samples Source, research data

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Utilization score & Perceptions	286	.022	.712
Pair 2	Utilization score & Financial sector development	286	.134	.023
Pair 3	Utilization score & Application Efficiency	286	.349	.000
Pair 4	Utilization score & Awareness	286	.028	.635

Table R34: Paired samples correlation Source, research data

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference
					Lower
Pair 1	Utilization score - Perceptions	-3.02797	4.05738	.23992	-3.50021
Pair 2	Utilization score - Financial sector development	.00000	3.58359	.21190	-.41709
Pair 3	Utilization score - Application Efficiency	2.84965	2.96798	.17550	2.50421
Pair 4	Utilization score - Awareness	5.26923	3.37705	.19969	4.87618

Table R35: Paired sample test Source, research data

Paired Samples Test

		Paired Differences	t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference			
		Upper			
Pair 1	Utilization score - Perceptions	-2.55574	-12.621	285	.000
Pair 2	Utilization score - Financial sector development	.41709	.000	285	1.000
Pair 3	Utilization score - Application Efficiency	3.19509	16.237	285	.000
Pair 4	Utilization score - Awareness	5.66228	26.387	285	.000

Table R36: Paired samples Test Source, research data