ICT Adoption in a Multicultural Context: A Case Study of the African Union

by

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I. DECLARATION

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III. ABSTRACT

Information and Communications Technology (ICT) adoption in a multicultural context needs to be well understood, since smooth ICT operations within several key sections of any multicultural organisation are impacted on by cultural factors. This study seeks to investigate the importance and effects of several variables – cultural tastes, cultural values, social structures, and the communication context and language – on ICT adoption in the African Union (AU). It also enhances understanding of issues faced by AU when adopting ICT in their daily operations.

The study has reviewed theoretical literature, specifically Diffusion of Innovation Theory (DIT), Unified Theory of Acceptance and Use of Technology (UTAUT), The Competing Values Framework/Model, and Value-Based Adoption Model (VAM). The study used the value-based adoption model because in a multicultural environment such as AU, if an innovation is valuable and cost effective then they users are likely to adopt it.

Reliability scores of the constructs were calculated by averaging the scores. The variables that could cause impact on ICT adoption included cultural values, social structure, culture taste, language and communication context. The tool was tested for reliability, and those questions that were found and unreliable questions were taken out from the final study. To enhance the test of validity of factors, Exploratory Factor Analysis (EFA) was preferred as the initial step in the validation process.

The research was conducted at the AU offices within and outside of Ethiopia. A total of 288 participants completed a semi-structured questionnaire. Exploratory factor analysis was used. The findings indicate that language and cultural taste had a noteworthy effect at the stated significance level ($\alpha<0.05$). Cultural values, communication, social structure and the communication context were found to be insignificant at the stated significance level ($\alpha<0.05$).

The study recommends that the AU embraces inclusivity of different and diverse languages into its ICT systems, to facilitate adoption and use by employees. In conclusion, the study points out that cultural tastes and languages are the vital elements in the adoption of ICT in the AU.

Keywords and concepts: African Union; communication context; corporate culture; culture, cultural taste; cultural value; information, communication and technology (ICT); ICT adoption; language; national culture; organisational culture; social structure, technology.

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V. LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of variance
AUC	African Union Commission
B2B	Business-to-Business
AU	African Union
B2C	Business-to-Consumer
CVF	Competing Values Framework
DIT	Diffusion of Innovation Theory
EFA	Exploratory Factor Analysis
ICT	Information, Communication and Technology
IS	Information Systems
ML	Maximum likelihood
PE	Performance expectancy
PwC	PricewaterhouseCoopers
RECs	Regional Economic Commissions
SAP	Systems Applications and Products
TAM	Technical Acceptance Model
UK	United Kingdom
UTAUT	Unified Theory of Acceptance and Use of Technology
US	United States
VAM	Value-based Adoption Model

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CHAPTER ONE
INTRODUCTION

1.1. Background

While technology adoption is an impetus to the growth of an economy and sustainable development, the rate of adoption varies due to factors such as the technology's nature, culture, societal receptivity, and existing policies in a country. Several authors have identified cultural, organisational, managerial, political, social, economic, and other technological factors that may affect the decision of individuals and organisations in different contexts to embrace and use technology.

Cheung, Chan and Limayem (2005) note that some of the factors influence consumer behaviour: the consumer's individual characteristics, influences exerted by the environment and product or service characteristics. Further, Eseonu and Egbue (2014: 2711) observe "the rate of technology adoption varies, depending on the nature of the technology, societal receptiveness, government policy, and a number of other social factors." More so, Tolba and Mourad (2013) argue individualism and uncertainty are cultural factors that should be factored to enhance innovation diffusion. Besides, culture influences attitudes and behavioural patterns, which studies show have an influence on decisions on technology adoption.

Hofstede and Hofstede (2001: 27) state that culture is "the collective programming of the mind that distinguishes the members in one group or category of people from another". They provide examples of cultures that provide some understanding of attitudes and behaviours towards technology and innovation in United States' (US) Silicon Valley and United Kingdom's (UK) Silicon Glen. According to Muriithi, Horner and Pemberton (2016), variances in these cultural dimensions influence nations' ability to foster innovation. In addition, they note that although there are cultural differences between various regions in a nation, regional cultures can be strongly influenced by national cultures, therefore they should be considered.

Although it is the right of each community to practise its own culture, it is likely to be influenced by the diverse cultures in its territory (Doğan, 2010). Doğan further argues that with factors such as migration, the result is multiculturalism and a multicultural society.

With multiculturalism, diversity and richness of attitude and behavioural patterns are witnessed. More so, it can eliminate prejudices, create an environment that tolerates life's diversity, and one with opportunities that allow for differences among people (ibid.).

Varying perceptions of organisational employees from diverse countries with different social and cultural backgrounds may explain differences in the adoption of new systems (Du, Whinston, Lu & Liu, 2010; Srite & Karahana, 2006). More so, when western cultural assumptions are embedded by western companies in their technologies, some culture conflicts in other sections of the world may be experienced (Karahanna, Evaristo & Srite, 2005). Consequently, adoption of Information, Communication and Technology (ICT) in a multicultural environment is an important area of study.

According to Lucas (1975), when ICT adoption and use is studied, one needs to take the whole organisation and its context into consideration. He recognised this as a main factor in IS research. The major reason for failure in implementing ICT is "too much focus on the technology neglecting change management and people issues" (ibid: 24). Besides, if a technology is complex, people find interacting with it challenging, and at times, may be unhappy with it, hence resist its adoption. On the other hand, even though certain cultural groups may struggle with change, "ICT applications can contribute to improve information and knowledge management inside the firm, reduce transaction costs, and increase the speed and reliability of transactions for both business-to-business (B2B) and business-to-consumer (B2C) transactions" (Barba-Sánchez, Martínez-Ruiz & Jiménez-Zarco, 2007: 107).

Markus and Robey (2008: 583-598) challenged the focus on change which tends "to overemphasise the rationality of managers directing change and the capability of ICT to create predictable changes of organisational processes". Imbalances in ICT access have been cited by government and business organisations, this has led to different projects being funded to address them. The challenges across societies and communities are on the rise; therefore, economic disparities can be devastating leading to a drop in the growth of the economy (Erwin & Taylor, 2004). Unfortunately, many projects initiated by government and individuals have not delivered the desired outcomes, widening the economic gaps that they should be closing (ibid.).

Ferreira (2010) maintains that culture dictates the level of innovativeness in a country. There has been resistance from employees when some organisations try to fine-tune their ICT functions and processes. It has become important, therefore, to recognise that any research on the adoption of ICT in organisational contexts needs inclusion of technology and its organisational context (Sarosa, 2007). This ensures that ICT is not presumed to be unproblematic when designed and installed in variable social settings (Sjöström, 2010).

Technology is used to ignite development of knowledge and learning in an organisation (Rosenberg, 1996). For an innovation to be successful, the actors should have practised using it to identify any problem that may arise. “This helps in the inscription of experiences and requirements in the resulting innovation” (Masoud, Petter & Honest 2019: 803), which can be used during the learning process. Though it might have challenges as observed by Latour (2001: 103-130), “inscriptions are strengthened in a process of translation where different actor groups, indispensable for the change, need to be enrolled into a network carrying out the change”. In other words, challenges can come from the network depending on socio-technical entities that manage and transfer ICT-mediated change (Linderoth, 2007). In addition, some information systems (IS) may be technically rather than culturally appropriate, resulting in a different culture and type of ICT system being installed, and therefore becoming user unfriendly (Gallivan & Srite, 2005). This kind of oversight could lead to expensive ICT implementations, making minimal improvement to performance of ICT equipment and the quality of services.

Effective communication contributes to the success of an organisation. Hofstede (2001) recognises that the well-being of an organisation depends on proper internal transmission of information. This implies that certain aspects that differ between countries such as differences in language, legal systems and administrative practices often negatively affect successful adoption of ICT (Vaara, 2002). Therefore, “there is need for availability of communication channels that are able to not only channel needs and requirements, but also communicate the resulting innovation” (Masoud, Petter & Honest, 2019: 803).

In addition, Ziemba (2016) observes that sociocultural factors are critical in achieving ICT adoption and usage in an institution. He notes “knowledge sharing, openness, teamwork, ability to work in cross-cultural teams and adjusting knowledge and skills to the changing labour market, education, and consumption, are important to equip people with the

necessary skills to adopt and use ICTs efficiently (p. 105)". More so, it is essential that an institution determines the level of ICT knowledge and skills that its employees have. According to Seyd and Mohammad (2009: 115), "the manager or owner's ability in ICT knowledge or skills increases the opportunity of ICT use amongst SMEs".

Therefore, an institution's management needs to come up with policies that will not only inform and guide how ICT will be adopted, but also ensure that the advantages that come with it are fully achieved. Continuous changes in ICT environments affect its adoption (Singh, 2010). More so, diversity in teams and the continuous changes in ICT environment add to ICT adoption complexity because cultural prejudices may also affect communication (Shachaf, 2008). The ever-changing ICT environment, especially a multicultural environment where staff have their own beliefs and attitudes towards IS, coupled with language barriers among other challenges, make people afraid of it hence affecting the rate of its adoption and diffusion. This study; therefore, explores ICT adoption in a multicultural context, specifically the African Union.

1.2. Problem Statement

Several individual decisions determine if one will adopt ICT or not. Innovation is a result of people's thoughts, and such ideas are "captured, recognized, filtered, clarified, modified, further developed, and finally commercialized" (Ravindra, 2005: 1). An individual's beliefs and feedback that one expects and receives from people, affect an innovation process. Naturally, it is expected that both positive and negative feedback will be received from individuals, teams and organisations within any given national culture. Nevertheless, institutions are diverse and so are the employees who have dominant values, norms, attitudes and practices that serve as sources of socialisation and social control.

The adoption of any technology by an organisation depends on the decisions made by the management. These decisions are based on the users' attitudes and values that arise from their daily life. More so, as observed by Petronilla, David, and Lyn (2016), if a staff is from a culture that does not embrace ICT, this could affect the need to explore and adopt technology. There is also a need to consider other factors such as employees' individualism and uncertainty to enhance and capitalise on innovation diffusion. For effectiveness, an institution's management must therefore understand the cultural

diversity of its staff and see how best to embrace it. Therefore, as observed by Schepers and Wetzels (2007), managers must be cautious on the factors that influence technology adoption as they vary depending on the prevailing culture.

Unlike in the past, recent years have seen the diffusion processes of new innovations become multifaceted as consumers and target audiences have a wide selection of channels from which to source information from, ranging from word-of-mouth communications, social media, network externalities among others (Peres, Muller & Mahajan, 2010).

Erumban and De Jong (2006) argue that culture plays a major role in identification of communication channels. Studies suggest that international organisations are inclined to have weaker technology adoption compared to organisations within one nationality (Gupta & Zeithaml, 2008). Yet, organisations that embrace technology experience improvement in products and services. Users today depend on communication processes, network externalities, and social communication networks (Albirini, 2006). Cultural factors that assist international organisations to decide on the strategic approach have not been fully investigated (Al-Jabri & Sohail, 2012).

According to the PricewaterhouseCoopers' (*PwC) Post Implementation Review Report* (2012), most end-users of AU rely on Systems Applications and Products (SAP) administrators and super-users to run reports for them. Ninety-five (95) per cent of users surveyed indicated they required training on the system's reporting functionality. The report further indicates there is incomplete data, especially in human resource and materials on management of data arising from data migration errors and omissions in the system's implementation stage. The issue has been aggravated by the continued input of incomplete employee information into the system. Years after the initial rollout, which was done in 2010, SAP is yet to be implemented in over 30 regional and liaison offices, forcing offices to rely on manual processes. Transactions captured in these offices must be sent to the head office for processing in SAP. This clearly shows that there are issues affecting ICT adoption, hence the need to examine whether cultural factors influence ICT adoption at AU.

1.3. Research Questions

The main question for this study is:

How do cultural factors affect the adoption of digital technology within a (large) multi-national organisation?

The following sub-questions guided in addressing the main aim of this thesis:

i. How does social interaction impact on the adoption of ICT in multi-national organisations?
ii. How does communication impact on the adoption of ICT in multi-national organisations?
iii. To what extent do cultural values impact on the adoption of ICT in multi-national organisations?
iv. To what extent does language impact on the adoption of ICT in multi-national organisations?
v. How does cultural taste impact on the adoption of ICT in multi-national organisations?

1.4. Aims and Objectives

This study has the following specific objectives:

i. Assess the importance and effects of social structure on adoption of ICT in multi-national organisations.
ii. Assess the importance of communication and its impact on adoption of ICT in multi-national organisations.
iii. Assess the importance of culture and its influence on adoption of ICT in multi-national organisations.
iv. Determine importance of language and its effect on adoption of ICT in multi-national organisations.
v. Find the importance of cultural taste and its impact on adoption of ICT in multi-national organisations.

1.5. Significance of the Study

This study focuses on ICT adoption in a multicultural context, and specifically it studies the following variables – cultural tastes, cultural values, social structures, communication context and language in the AU. It also enhances understanding of issues faced by AU when adopting ICT in their daily operations. Therefore, scholars may find this research useful in expanding their knowledge, especially in international public organisations like the AU, where staff are drawn from various countries with diverse cultures.

Governments and public organisations can also benefit from these findings as they provide some insights into their regulatory bodies, and the international organisations on the salient aspects of the culture differences that adversely affect ICT adoption. This could allow them to make timely and appropriate interventions to ensure effective integration into the culture for the successful adoption of ICT.

This study further provides a deeper understanding of the relationship between organisational culture and ICT adoption. As a result, the study can be useful for other similar public organisations planning to deploy ICT tools and applications. This study will complement existing research on culture and ICT adoption.

In addition, the study will be potentially significant to managers in medium sized and large enterprises as they may gain insights on the impact of culture on adoption of ICT. The results of the study may interest practitioners, especially those working in human resources, demand chain, and supply chain areas of business and humanitarian sectors of the nascent countries for which culture has been a major constraint. This may influence enterprise managers in determining strategies and effective measures to achieve success in adoption of ICT.

This research may also have implications to system developers who may wish to design innovative ICT solutions, informed by cultural tastes, cultural values, social structures, and the communication context, which are variables for this study. Thus, system developers can strive for ICT solutions that are easy to adopt, regardless of the existing culture in an organisation.

1.6. Delineation

This is a case study of the African Union (AU) which is in Addis Ababa, Ethiopia. It is at the forefront of ensuring Africa integrates rapidly and has sustainable development. The Union achieves this by upholding “unity, solidarity, cohesion and cooperation” (African Union, 2018) among the African States. The AU is also responsible for developing new global partnerships.

The AU represents and defends the Union’s interests. It comes up with a common position on continental issues, develops plans for consideration by the Executive Council to promote, coordinate and harmonise strategies with those of the Regional Economic Commissions (RECs). It also ensures that gender is mainstreamed in all its activities.

The African Union Commission (AUC) is the secretariat of the AU. Its mission is to evolve to “An efficient and value-adding institution driving the African integration and development process in close collaboration with African Union Member States, the Regional Economic Communities (RECs) and African citizens” (African Union, 2018). The Commission, therefore, is an institution whose role is the daily management of the African Union (African Union, 2018).

The AU is a multicultural environment, with employees drawn from its 55 Member States. Further, its six official languages are: Arabic, English, French, Portuguese, Spanish, and Swahili. The research targeted all staff of the Commission (1,367), who are active MS Exchange users, including management, and those in professional and general service categories.

Therefore, in such an environment, the management cannot ignore cultural diversity and differences. Considering this context, this research seeks to examine whether the multicultural and multi-lingual environment of AU has any effect on the ICT adoption.

1.7. Limitations

The research tool was shared through the internet, due to the nature of AU, where communication among staff is majorly through official email. A section of the respondents was not able to assess the questionnaire, and therefore did not participate in the research

as anticipated. The timing of some participants to respond to the questionnaires due to their busy working schedules was also a challenge. The researcher made special arrangements to meet some of these participants outside office hours. Further, some responses were incorrect, an indication that some of the participants were not cooperative.

1.8. Organisation of the Dissertation

This research dissertation has six chapters. Chapter One gives the primary background, motivation, context, scope and limitations of the research. Chapter Two discusses literature on culture and ICT adoption. The research design and data collection methodology are elaborated in Chapter Three. Chapter Four discusses the research findings elaborated via tables, charts and graphs; and Chapter Five presents a summary of the findings. Finally, Chapter Six outlines the conclusions and recommendations of the study.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This chapter discusses existing empirical and theoretical literature on culture and ICT adoption. It highlights the influence of national culture on organisational culture. The chapter also discusses multicultural environments, effects of culture on ICT adoption, and cultural framing on technology. Further, the chapter presents a review of common theories and models related to innovations and adoption of technology, and how culture influences adoption. Finally, the Chapter presents a conceptual framework for the study.

2.2. Review of Empirical Literature

2.2.1. Digital Technology/ICT

Dibaba and Babu (2017: 10) define digital technologies as “electronic tools, systems, devices and resources that generate, store or process data”. According to Kapur (2018), digital technologies are widespread, and are in the form of computers, laptops, tablets, smartphones, mobile phones etc. Some of the digital technologies that have proved beneficial to the institutions as identified by Capaldo, Flanagan, and Littrell (2008) are: search engines, which provide knowledge and information that helps individuals and institutions to understand various concepts; smart phones and mobile phones used to communicate with the other individuals; and Microsoft Office, a software suite used to prepare any assignment that involves writing. Microsoft Office also has Microsoft Excel used to prepare spreadsheets, and Microsoft PowerPoint for making presentations. Therefore, institutions to carry out their mandate, have extensively used digital technologies.

Kapur (2018: 1) observes that “digital technology enables individuals to work in collaboration towards the achievement of common goals and objectives, enhancement of employee productivity, employee satisfaction and retention and improvement of skills, abilities and expertise amongst the human resources”. Therefore, to achieve the common goals and objectives, it is paramount that employees have efficient knowledge and skills to utilise the digital technologies that they possess. While there are advantages of digital technology, there are disadvantages which are an obstacle to information and knowledge

such as cyber safety, which entails how you behave hence exposing oneself to, for example, attacks; cyber-crime which includes illegal activities; and cyber security which includes unauthorised use of a computer system (ibid.). Therefore, employees when making use of digital technologies, need to be cautious of the challenges that come along with digital technologies.

While the term ICT has been defined widely by various scholars, this study shall utilise the Association of African Universities (2018) definition that ICT encompasses "all sorts of computing and communicating tools and techniques such as computers, software, networks, satellite links and related systems that allow people to access, analyse, create, exchange and use data, information and knowledge". According to literature on digital technology, ICT supports information sharing and facilitates knowledge transfer and acquisition.

2.2.2. Culture

According to Hofstede (2001), the word 'culture' can be explained in different contexts such as civilisation, which literally means, training or refining of the mind. Second, as derived from anthropology, "it is the communal habits of acting, thinking, and feeling" (ibid.: 385). It is also defined by Hofstede, Hofstede, and Minkov (2010: 6) as "the collective programming of the mind that distinguishes the members of one group, nation or category of people from others". Further, Merchant (2007: 432) observes that "culture is something that is shared by all, or almost all members of some social group; and is traditions, rules, behavioural traits and actions observed by a group of people that can show how they perceive or interpret the world". This implies that for national culture, the category is the nation, while for organisational cultures it is a specific organisation. This also entails other factors such as nationality, being equal and environment.

According to Sarosa (2007), culture has many different contexts and meanings associated with the values or beliefs, which are shared within its subcultures. Karahanna, Evaristo and Srite (2005) observe that while values are often constant in nature, they do change over time, reflecting changes in culture. Further, culture is not static but rather dynamic and progresses over time (Tung, 1995). According to Myers and Tan (2002), and Beugelsdijk, van Schaik, and Arts (2006), most countries have many culture/subcultures, therefore studies on influence of culture on information systems

should focus on a complex and multidimensional approach. Eseonu and Egbue (2014) further observe the multidimensional nature of technology adoption and innovation leads to different adoption rates across countries which is as a result of economic, technological and socio-cultural factors.

Geertz (1973: 145) analyses culture as “not an experimental science in search of law, but an interpretive one in search of meaning”. He notes that people are “symbolizing, conceptualizing, meaning-seeking animals”, that is “an organism cannot live in a world that it is not able to understand”. Further, he acknowledged humanity’s need to “make sense out of experience, to give it form and order”. This further explains the fact that an institution has several employees each with a culture of their own, and therefore must be critically reviewed with the aim of having an agreed meaning to avoid misinterpretation.

This study focuses on the African Union; a culturally diverse institution, as employees are drawn from 55 Member States. In such an organisation, culture is dynamic and evolves over time, as employees join the organisation and are introduced to other cultural experiences. Amadeo (2020) defines cultural diversity as “when differences in race, ethnicity, language, nationality, religion, and sexual orientation are represented within a community”. While cultural diversity has favourable effects such as “enhancements to employees’ competence and creativity” (Al Jenaibi, 2011: 49), those that are unfavourable include: “miscommunication, creation of barriers, and dysfunctional adaptation behaviours” (Martin, 2014: 89).

In an organisation with cultural diversity such as AU, one of the negative effects is the staff tendency to engage in interpersonal conflicts. This happens because team spirit is expected in a multicultural environment with a common goal and purpose, yet employees are drawn from different nations whose culture differs and are expected to adapt to a certain organisational culture. In the process, some employees adopt change while some resist and lean towards their comfort zone, leading to conflict and negativity. A negative organisational culture automatically creates a problem in the growth and productivity of an organisation. This can be best curtailed once the leadership acknowledges cultural diversity in their organisation from the onset.

2.2.3. Organisational Culture

Organisational culture has been defined by scholars as a system where staff in a certain establishment share assumptions, values and beliefs, which determine how they behave. These shared values guide how staff in an organisation act, including how they dress, speak and execute their jobs. Thus, every organisation comes up with policies on its culture that members of an organisation strive to maintain (Regi & Golden, 2014). Therefore, an organisation's unique culture develops once it has a distinct value for each behaviour, which when combined form a culture.

The relationship between organisational and national culture is an aspect that influences an organisation. Schneider and Barsoux (2003) note that the assumption by many multinational companies is that the national identity's influence on an organisational culture is minimal, and therefore an organisation will overcome it. However, scholars such as Hofstede (1980; 1997) and Lauret (1983) note that the influence that the national culture has on an organisation cannot be ignored, as it is persistent. Further, Trefry (2006) indicates that national culture affects organisational culture, including influencing and modifying culture. "Even if we view the organisational culture as homogenizer supposition as too simplistic, organisational culture does, undoubtedly, modify the impact of the national cultural background that individuals bring with them into the organisation" (ibid.: 567). Hofstede (2001) views national culture as stable, and that "this stability can be explained from the reinforcement of culture patterns by the institutions that themselves are products of the dominant cultural value systems" (p. 255). Should cultures shift, overall, "they shift in formation, so that the differences between them remain intact" (ibid.: 255).

With globalisation, multicultural institutions are on the rise, and they cannot disregard cultural diversity. "The challenge that faces each multicultural society is to reconcile the recognition and protection of, and respect for, cultural particularities with the affirmation and promotion of universally shared values emerging from the interplay of these cultural specificities" (UNESCO, 2009: 43). Although cultural and individual differences do not fade completely, they change making it possible for individuals to fit in an organisation or team (Trefry, 2006). Organisations such as AU, therefore, should embrace practices, processes and procedures and respect diversity, as this will not only promote learning

but also different ways of doing things. By so doing, ICT adoption in the multicultural organisation will be expedited.

Individuals in organisations place value on various assumptions, values and beliefs, then adjust their behaviour in line with the perceived set of characteristics (Hofstede, Hofstede & Minkov, 2010). When focusing on an organisation and the components of culture, the relationship is based on the performance and functions from different sectors or departments within it.

2.2.4. Cultural Framings of Technology

Culture as conceptualised by Van Zyl (2013: 62) is "a malleable process that shapes and orders the subjective experience of individuals". From the existence of various trends and visions of culture such as, "Tylor's cultural evolution, Boas' culture in context, Durkheim's organic society, Sapir's culture and language, Malinowski's functions of culture, Harris' cultural materialism, Lévi-Strauss' structuralism, Foucault's stratification and power, and Wolf's culture, history and power" (ibid: 75), it is clear that culture is a complex notion. It can be summarised as "consisting of systems of social relations and meaning, which are interrelated" (Van Zyl, 2013: 75).

Culture is entrenched within the existing local, regional, and global beliefs, which either reinforce or hinder it among individuals, groups or organisations. Therefore, Van Zyl (2013: 63) notes "culture becomes enmeshed in global movements of capitalism, modernity, consumerism, hyperconnectivity, development approaches, and geopolitics, inter alia". This means that culture is not general among nations, societies and institutions, as many variables come into play.

Further, Combi (2016) observes culture creates a sense of identity for human beings. Therefore, he notes when someone interacts with a new technology for example, they strive to fit it in an already existing pattern, hence making changes to what was in existence. We have thus seen new technologies, for example, leading to changes in our day-to-day life, societies and institutions. While technologies may be similar around the world, their interpretation and usage may be different among individuals, institutions, societies and nations. According to Combi (2016: 9), "the local culture acquires the new technologies, re-works them to make them acceptable to the existing culture in that

community and sends them back to the global level in a continuous exchange of intercultural influences and in constant transformation".

2.2.5. Culture and Technology Adoption

According to Azam and Quaddus (2013), the function of culture is contentious, when it comes to embracing information technology (IT) processes. Some scholars are confident that culture effects whether an organisation will adopt certain technologies or not in a given country (Meso, Musa, & Mbarika, 2005). Thomas and Streib (2003) also recognise that there is need to observe cultural and contextual variations in an institution when adopting information technologies. They observe culture influences adoption, if the borrowed technology is being implemented in a developing country. Studies have further found that technology diffusion among institutions and individuals vary in the same way beliefs and norms vary across nations. More so, beliefs and norms influence how technology will diffuse in that culture (ibid.).

Rogers (2003:167-185) defines the adoption of ICT in an organisation as "the physical acquisition of technical artefacts or an intention to implement innovation with the emphasis being on the decision to adopt". Thong and Yap (1995: 429-442) describe IT adoption as "the intention, strategy or the way of using major parts of a computer to support operations, management, and decision-making in the business". Unfortunately, to improve performance significantly, many institutions have invested heavily in technology (Merchant, 2007).

Among the many theories and models proposed, Walsham (2002) suggests three approaches to underpin successful adoption of ICT in organisations: adoption, domestication, and diffusion. In agreement, as per these approaches, different types of new technology have evolved. As a result, there has been effective and efficient production of goods and services.

Innovation exists in different forms. First, product innovation, which describes the creation of new products or technologies; and second, process innovation, which refers to improvements in the manufacturing of (new) products. On the other hand, organisational process innovation is often perceived as a special subtype of process innovation,

indicating new ways of organising work (Edquist, Hommen & McKelvey, 2001). Clearly, all these three innovation types are relevant in studies of ICT adoption (Hyard, 2013).

For an innovation to be successfully adopted, there is need for continuous information flow, which allows feedback both within and outside the organisation. Moreover, an organisation with a higher degree of network interconnectedness allows information and ideas to be shared among staff, which increases innovativeness (Rogers, 2012). However, those with uncertainties are surrounded by formalities and have policies that must be followed to reduce the uncertainty (Hofstede, Hofstede & Minkov, 2010).

A monoculture environment is exposed to less barriers to ICT adoption, unlike a multicultural environment such as the AU. Some of the challenges are stereotypes which may lead to discrimination and wrong perception, language barriers, inadequate career planning and employee development, among others. For example, gender equality in the ICT workforce is not achieved when men dominate as technical employees and women act as end-users' providing administrative and secondary ICT support (Abrahams & Goldstuck, 2010). While this may be due to lack of technical skills, female minimal participation could also be because of work-family balance, absence of mentors and role models, and disparities in salary (Abrahams & Goldstuck, 2010). Eventually, this affects national development because gender equality and balance should be promoted also in the workforce. According to Canton, de Groot, and Nahuis (2002: 299), "technology adoption naturally encounters resistance for political power, national culture, unions, regulations and laws." For example, they note that trade unions may influence their members not to adopt a technology because "they act to protect their members from labour-saving schemes," (ibid.: 299).

To ensure ICT adoption is effectively and efficiently embraced in an organisation such as AU, these barriers must be broken. AU should recognise that while embracing culture requires a breakdown of cultural barriers, this is accompanied by resistance to change and confusion, making ICT adoption in the organisation a long process. However, this diversity in culture is usually a good opportunity for collaborative learning (Trompenaars & Hampden-Turner, 1998: 257) in an organisation.

2.3. Review of Relevant Theoretical Literature

2.3.1. Diffusion of Innovation Theory (DIT)

This is a theory that strives to explain the way communication channels and opinion leaders shape the spread and adoption of an innovation in a community. Innovations provide comparisons that bring advantages in utilisation of the technology; as well as efficiency and increases in usage and operation of the technology (Rogers, 2003). Further, he states “getting a new idea adopted, even when it has obvious advantages, is not easy” (p.1), so the availability of these indicators of innovations speed it up. Further, he argues that centralisation of power negatively influences technology adoption. "The more power is concentrated in an organisation, the less innovative the organisation is” (ibid.: 358). This is so because, he argues, that in a centralised institution, power is held by only a few top leaders who are "poorly positioned to identify operational-level problems, or to suggest relevant innovations to meet these needs” (p. 358), unlike a decentralised institution.

The kind of interactions and roles of opinion leaders define whether an innovation will be taken up or not. Innovation diffusion research has tried to explain the dynamics of adoption of technology such as the internet. It is therefore necessary to understand the category of people in the multicultural environment such as AU, as this will determine the strategy to use to ensure ICT adoption is achieved. Rogers (2003) identifies the five categories as follows:

a) Innovators: They are the first adopters of the technology, who are innovative and risk takers. These people are an easier target as they need little convincing.
b) Early adopters: They are strategic leaders, acutely aware of the need to change. They need minimal facts to accept an innovation.
c) Early majority: They are not leaders; however, they like to embrace innovation. Evidence on how they will benefit from an innovation or the effectiveness of the innovation appeals to them.
d) Late majority: They are sceptical and only take up an innovation after a majority have done so. To take an innovation up, they need to be persuaded by proving to them how others have successfully embraced and benefitted from an innovation.
e) Laggards: They are sceptics and conservatives. They resist change and are hard to convince; therefore, to appeal to them, they need statistics and peer pressure.

This theory furthers notes that “very few innovators adopt the innovation in the beginning/early (2.5%), in a short time later (13.5%), the early majority (34%), the late majority (34%) and after some time, the laggards (16%)” (ibid.: 282-283). For each of the category of adopters, the following factors affect whether the users will adopt an innovation:

a) Relative advantage: The innovation should be an improvement and should have more benefits than the one it is replacing.
b) Compatibility: The innovation should fit into the current innovation in terms of the values, needs and experience it offers to its users.
c) Complexity: The invention should not be overly complicated, as this would undermine its execution.
d) Trialability: The invention must be easy to test and use.
e) Observability: The invention must be seen to produce concrete results by the user (Wintjes, 2016).

The innovation itself, channels of communication, time and the social system determine whether an innovation will be adopted (Rogers, 2003). The main communication channels for information flow are mass media channels and interpersonal channels that are useful in generating awareness about innovation and its application, respectively. These two channels facilitate an innovation’s adoption or rejection. The social system structure also influences the diffusion in terms of a boundary. The time one takes to adopt an innovation is dependent on the decision procedure, inventiveness and adoption rate. The decision procedure is how one passes information of an innovation to confirmation of its decision. Inventiveness is how much one adopts new ideas relative to others; and finally, the adoption rate is the number of people that embrace an invention at a specific time. Research has found that an innovation that is more compatible has a greater possibility of being adopted than one that is not compatible (Greenhalgh, Howick & Maskrey, 2014).

Therefore, a clear understanding of this theory is necessary for this study as it stipulates the need to understand the type of users that need to adopt an innovation and the nature of the innovation. More so, communication and media channels employed to pass across innovation information determine whether it will be adopted or not. For an institution to easily adopt an innovation, it must accept it. Thus, innovators should be identified in an institution as they adopt an invention earlier than the rest. Further, the principal user should be involved from the initial stage of developing an innovation to the final stage to

fast-track its diffusion (Tolba & Mourad, 2013). They concluded that innovation diffusion spreads faster in individualistic than collectivist cultures (ibid.).

2.3.2. Critique of Diffusion of Innovation Theory

Rogers (2003) did not realise that while some people may have some characteristics of early adopters or innovators, they may not embrace innovation as quickly as may be expected. For example, a woman may fail to adopt a fashion innovation because of religious beliefs. Rogers was not concerned about this group and did not name it. On the other hand, Babatunde (2011) observed that for such a group of adopters, there was need to include zero tolerance, because there are individuals who are inventors but may not easily adopt certain inventions.

Non-adoption of new technology is one area of innovation that is least understood (Pesole, 2015). At times people avoid a technology without considering when and why it was developed, even in situations where a newer technology is developed to replace an existing one. Furthermore, some may discontinue using a new technology because they are discontent (Pesole & Nepelski, 2016). Research assumes that for rational or utility maximising consumers, new technology eventually replaces the old (Renda, 2016). However, according to market history, this does not happen so effortlessly, spontaneously or even completely. For example, Pesole (2015) notes that in the maritime industry during the 19th century, some target markets did not adopt the new technology of steam ships and diesel, they remained with the old technology of sailing ships. Those producing the old technology continued commercialising it and fast-tracked invention as a reaction to threats of an invention; Gilfillan called it the “sailing ship effect” (1935: 162-163).

Botha and Atkins (2005) summarise key criticisms of this theory by noting that it has a pro-innovation bias, by assuming change is good, a position for the later adopters such as “laggards”. In addition, they note emphasis is on “individual blame” at the expense of understanding the effect social structures have on adopting an innovation (ibid.). While some users may limit adoption of new technology to direct factors, others limit it to “external” factors because they relate to the old characteristics of a technology that should be replaced (MacVaugh & Schiavone, 2010). If users find these characteristics more suitable than those of the new technology, they are more likely to resist product adoption.

While in agreement that diffusion of innovation is neither uniform (Pesole & Nepelski, 2016) nor inevitable, this study acknowledges that the dynamics of ICT adoption in a multi-cultural context are both direct and indirect and need to be studied to enhance technology adoption in an institution.

2.3.3. Unified Theory of Acceptance and Use of Technology (UTAUT)

This theory highlights use of information for innovation based on technology, system and continuous use of many innovations based on the users' needs and behaviours (Venkatesh, Morris, Davis, & Davis, 2003). For the application of this theory, it identifies four factors that directly influence users' acceptance and their behaviour when using an innovation, which include: expectation of performance, expectation efforts, and influence of social and condition facilitation (ibid.). All of these except the condition facilitation have a direct impact on customers' usage and behaviour towards the technology, while facilitation conditions have a direct determinant on user behaviour. Venkatesh *et al*. (2003) identify four factors that directly determine customers' acceptance and their behaviour when using an innovation. They include:

a) Performance expectancy (PE): Users adopt a technology depending on their understanding of its usefulness.
b) Effort expectance: Users accept and adopt a technology if they perceive it to be used easily.
c) Social influence: Users' decisions to accept a technology are influenced by those dear and close to them. The desire to connect encourages people to adopt technology (Pederson & Ling, 2002).
d) Risk perception: By nature, people resist change. Therefore, risks such as insecurity or loss of privacy prevent users from exploring new technology.
e) Trust factor: If a technology is reliable and available when needed, then users embrace it. Users will adopt a technology that is available when users need it (Williams, Rana & Dwivedi, 2015).

This theory highlights other factors besides demographics and culture that influence ICT adoption. Thus, the study determines what drives users to adopt ICT in AU since the users' intentions may be different due to culture and ICT infrastructure in an organisation. However, this theory has been criticised for being too complex and it does not expound on individual behaviour (Casey & Wilson-Evered, 2012; Van Raaij, & Schepers, 2008).

2.3.4. The Competing Values Framework/Model

The Competing Values Framework (CVF) originated as a framework for organisational effectiveness analysis. It was developed after a two-stage study that was done to find out the factors that lead to effectiveness of an organisation (Quinn & Rohrbaugh, 1983). According to Cameron and Quinn (2006), the model is vital because it increases coverage of a population within a locality. The model's formulation has been used in tandem with other well-known and acceptable frameworks that expound on the impact of culture on people's values and assumptions, and their thoughts and understanding of information (ibid.). As a result, CVF has repeatedly been used as a framework for analysing organisational cultures. The model has four main cultural types practised by different organisations. Cameron and Quinn (2006: 28) called them "clan, adhocracy, market and hierarchy cultures". The four types of culture are summarised in Table 2.1.

Table 2.1: Types of culture (Cameron & Quinn, 2006: 28)

Flexibility and Discretion			
Internal focus and integration	**Clan Culture** It is a culture where people share values and common objectives. This creates an environment of collectivism and reciprocal help, with prominence on employee freedom and evolvement. Organisations with this culture appreciate information and knowledge sharing, teamwork, communication, cohesion and participation. With such attributes, these organisations may expand, develop and start involving and collaborating with internal parties (Gallivan & Srite, 2005).	**Adhocracy Culture** This is provisional, it ends once the tasks planned are accomplished, and comes to life again when new tasks emerge. Since these organisations believe in original and creative initiatives, variations in success and creativity lead to better performance (Cameron & Quinn, 2006).	**External focus and differentiation**
	The Hierarchy Culture It has a defined organisational structure, with policies and laws that must be observed and distinct duties. Such institutions have an internal focus, with emphasis on control. The institutions aim to be stable, predictable and efficient (Cameron & Quinn, 2006).	**The Market Culture** It focuses on the dealings with the external settings instead of internal administration. "… it employs a market mechanism of control in which what is desired is that each person simply maximises his or her personal well-being (profit)" (Ouchi, 1979: 842).	
Stability and control			

Cameron and Quinn (2011) argue that organisations that are effective and competitive emphasise flexibility, discretion and dynamism. In a multicultural environment such as AU, an organisation can be effective if it adopts a combination of these four cultural types. On the other hand, Mian, Hai and Jun (2008) observe that each cultural type on performance has its own advantage to an organisation, therefore organisation culture should be studied holistically. “Cultural types exert their impacts in a synergic way” (ibid.: 272). This research, however, discusses the AU’s uptake of ICT in the context of its multicultural character with the aim of finding out which culture type is prevalent in the organisation.

2.3.5. Value-Based Adoption Model (VAM)

The Value-based Adoption Model (VAM) recommended by Kim, Chan, and Gupta (2007) indicated that Technical Acceptance Model (TAM) suggested by Davis, Bagozzi, and Warshaw (1989) was restricted in clarifying adoption of an innovation. While TAM explains the reason of using an innovation is determined by how useful it is and how easy it is to use it, VAM says it is based on how beneficial and cost effective it is (technicality and perceived fee). Adopting an innovation is based on the cost-benefit hypothesis, where the user compares the cost of insecurity before picking an innovation (Lin, Wu, Hsu, & Chou, 2012).

According to Zeithaml’s (1988) widely accepted definition, perceived value is the perception that users have about a technology; they compare what is given versus what they get from it. Therefore, the consumers will assess the benefits such as its usefulness that come with the technology, and what they need to sacrifice, for example spending more time on it to learn.

This study shall use the value-based adoption model. In a multicultural environment such as AU, if an innovation is beneficial, for example facilitating a user to meet their targets, and cost effective in terms of ease of use and readily available technical support, then the users are likely to adopt it. According to Roostika (2012), an innovation can have benefits such as it improves job performances, increases efficiencies, kills boredom and offers enjoyment. More so, sacrifice aspects should be minimised as this may improve reliability, connectivity and be user friendly.

2.4. Conceptual Framework of the Research

The emergence of national and organisational culture is distinct, but it shares the focus of describing “the values that distinguish different groups from each other” (Leidner & Kayworth, 2006: 357-399). This then follows a value-based theoretical approach dominated by cultural studies. It underpins the relationship between culture and adoption of ICT in an organisation.

In a multicultural environment, several users drawn from different cultures exist. While some users in a category such as innovators and early adopters would make better opinion leaders and influence other users to adopt an innovation, other factors such as culture, communication, and language come into play. More so, the users’ expectations and value they get from an innovation influence if they adopt it or not. Therefore, this conceptual framework for this study is guided by the value-based model to determine how cultural values such as equal opportunity, racism, material comfort, freedom among others; communication; language; social structure and cultural taste influence individual employees or users to socialise with ICT and determine its adoption. The constructs’ relationship in this study is as summarised by the conceptual framework in Figure 2.1.

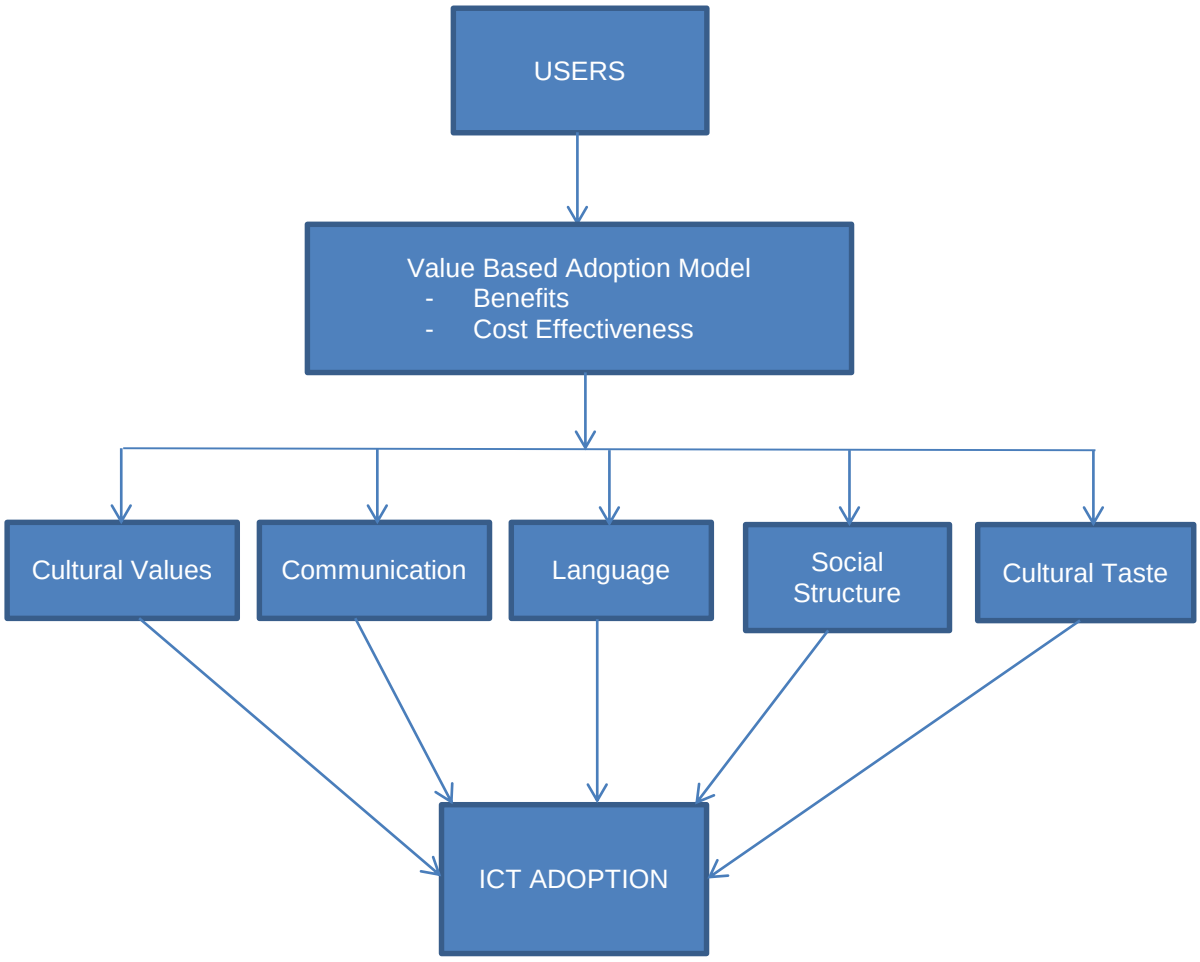

Figure 2.1: Conceptual Framework Underpinning the Study as Proposed by Karahanna, Evaristo and Srite (2005)

The value-based model recognises the link between local institutions and national cultures, as well as the concurrent impact on any person in terms of conduct, although they also have some demerits. This research, therefore, adopts a value-based model as a conceptual model as supported by Karahanna, Evaristo and Srite (2005) due to the rich value it has on the research.

2.5. Chapter Summary

This chapter defines digital technologies/ICT, which are pervasive and critical for institutions to meet their roles and objectives. It goes further to define culture, which has different meanings and contexts, such as national and organisational culture. National culture has effects on organisational culture and may modify or influence it. While a technology may be universal, its interpretation and usage around the world may be different among individuals, institutions, societies and nations. A monoculture

environment has less barriers compared to a multicultural environment. Therefore, to ensure that a technology is easily embraced barriers such as language, discrimination and perception must be broken.

The chapter also reviews theoretical literature, specifically Diffusion of Innovation Theory (DIT), Unified Theory of Acceptance and Use of Technology (UTAUT), The Competing Values Framework/Model, and Value-Based Adoption Model (VAM). This study shall use the value-based adoption model because in a multicultural environment such as AU, if an innovation is valuable and cost effective then users are likely to adopt it. Finally, the Chapter discusses the conceptual framework that guides this study to determine how cultural values such as equal opportunity, racism, material comfort, freedom among others; communication; language; social structure and cultural taste influence individual employees or users to socialise with ICT and determine its adoption.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the method and techniques used in the research to process data from respondents. In this chapter, research design and the methods used for data collection are explained in detail. Specifically, the chapter discusses the research design, population and sampling, data collection and administration, data analysis, validity and reliability of the research tool, exploratory factor analysis to determine constructs, and the extraction and determination of rotation method.

3.2 Research Design

A study design shows how the investigation was undertaken and solved (Orodho & Kombo, 2003). It is intended to give a framework for a study. According to Aaker, Kumar, and George (2000), in research design, a decision on how the appropriate information of a study will be obtained has to be made.

This study adopted a cross-sectional descriptive survey approach. Fox and Bayat (2007: 45) observe that “it aims at casting light on current issues or problems through a process of data collection that enables them to describe the situation more completely than was possible without employing this method”. More so, descriptive research design describes various aspects that are relevant to areas of interest either in an individual, organisation or industry (Saunders, Lewis & Thornhill, 2009). Consequently, the research design establishes the effects of cultural indicators on adoption of information technology at the AU. According to Kothari (2004), a descriptive design uses statistical methods to process raw facts into information. Cooper and Schindler (2003) state that a survey method answers the five key questions of who, what, where, when and how much. Further, Mugenda and Mugenda (2003: 83) observe “a descriptive survey enables researchers to summarize and organize data in an effective and meaningful way”.

The AU has an approximate population of 1,367. A purposive sampling design was used for the study. Kothari (2004) supports the selection of members of a population to participate in a study, and Oates (2006) concurs that purposive sampling produces data that meets the research’s aim.

Participants of this study were engaged with as Microsoft Outlook active email users within the organisation. The users were from different categories of staff working in the AU that included senior management (directors, managers and heads of departments/divisions), professional staff (officers and senior offices in different disciplines), and general service employees.

Primary data was obtained through questionnaires, which were preferred because they provide an efficient and easy way of extracting raw facts from respondents. Online questionnaires were preferred for their simplicity of sending emails to all active Microsoft outlook email users within headquarters and regional offices at little or no cost. Oates (2006) also states that questionnaires allow for the posing of identical questions and a pre-defined range of answers to each respondent. In line with this, most of the questions were closed-ended, while a few were open-ended.

This research mainly made use of nominal and ordinal data. For nominal data, the responses were categorised by numbers, which made it possible for analysis via frequency of responses from participants. For ordinal data, on the other hand, Likert scale-based questions were used where a range of responses were allocated to a quantitative scale. Once numeric data was obtained, it was easier to graphically display findings in figures and tables for further data processing. For completeness and comprehensibility of the research study, data collected was examined and checked; and research findings were presented in tables and charts. More so, through exploratory factor analysis, factor loadings, regression and correlation analysis were conducted.

3.3 Population and Sampling

The population targeted was all staff (1,367) working in the AU in 2017 who are active MS Exchange users because the questionnaire was shared on the official email address. Active email addresses were extracted, and the owners requested to respond electronically to the questions that were on the questionnaire. The population is grouped in three main categories: general service employees, professional staff (officers and senior offices in different disciplines), and senior management (directors, managers and Heads of Departments/Divisions). The breakdown of the population is displayed in Table 3.1.

Table 2.1: Research population

Staff levels	Employees
General service staff	768
Management staff	88
Professional staff	511
Total	1,367

3.4 Data Collection and Administration

The researcher developed a questionnaire in English and French (Appendix I) which was shared with AU staff through email. Mugenda and Mugenda (2003: 384) emphasise the use of questionnaires "for intensity and richness of individual perceptions in respondent responses".

In this study, the questionnaire was pretested to ensure its reliability. The respondents used during the pretesting were excluded in the actual data collection. Reliability finds out if the researcher gets the same results or data after administering the research instrument multiple times. "It refers to the consistency of scores or answers provided by an instrument," (Saunders, Lewis, & Thornhill, 2007: 202).

Thus, the researcher conducted a pilot study to measure the questionnaire's reliability, language correctness, respondents' interpretation, and to establish the how long it would take to complete it. The responses received from pilot survey necessitated some minor corrections on the questionnaire. "Errors likely to affect reliability are interviewer/interviewee fatigue, bias from the interviewer and inaccuracy of the instrument in use, inaccuracy in scoring by the researcher and finally, unexplained errors whose source cannot be determined," (Kitheka, 2011: 30).

A letter of introduction was attached to the questionnaire informing the participants of the need to participate with an assurance that the researcher would treat all the information received with utmost confidentiality. More so, as observed by Buchanan and Hvizdak (2009: 37), online research challenges the principles of traditional research such as: "consent, risk, privacy, anonymity, confidentiality, and autonomy, as there exists data storage, security, sampling, and survey design challenges surrounding it". The participants were also informed that the survey had received ethical clearance from UNISA and was endorsed by AU management.

Staff were requested to respond within a period of three weeks. The researcher made follow-ups with the participants to ensure that they had received the questionnaires and completed them accordingly. During the follow-ups, the researcher found that some participants had not received the questionnaires because their mailboxes were full. The researcher assisted the users to free up their mailboxes and printed the questionnaires for those who were ready to participate.

After a week, most of the questionnaires were completed. The researcher further followed up with respondents to ensure their compliance in the completion of the questionnaires. In some instances, the researcher had to talk to the line managers to request their subordinates to participate in the survey. By end of the second week, the researcher had collected all the completed questionnaires and the few participants who had not returned their questionnaires by the deadline, were non-participants.

Out of 1,367 participants who were sent questionnaires, only 288 completed and successfully submitted their responses. A further 381 participants did not attempt to fill the questionnaires at all; these were categorised as non-responses, and 698 participants read but did not fully complete the questionnaires which made them unusable responses. Tools4dev observes that “a good maximum sample size is usually around 10 percent of the population, as long as this does not exceed 1,000”. Therefore, 288 responses are a good sample size for this study. Table 3.2 summarises the results.

Table 3.2: Response rate of participants

Description	Count	Percentage
1. Non-responses	381	27.87
2. Unusable responses	698	51.06
3. Usable Responses	288	21.07
Total (Sample Size)	**1,367**	**100.00**

3.5 Data Analysis

Data analysis summarises and interprets the data that were collected by use of analytical and logical reasoning with the aim of determining trends, patterns and relationships. The data was analysed and presented in figures and tables. The construct values were calculated by averaging the test item scores. For example, culture values construct scores were calculated by averaging the scores of Questions B2a, b, c and e. Correlations

of the variables were done before computations of multiple linear regressions were performed. The results were then used to predict adoption of ICT by the AU organisation using the equation below:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$ (International Cooperative Alliance - ICA, 2005) ……..……*(1)*

Whereby:

Y = ICT adoption level,

X1 = Social structure,

X2 = Communication,

X3 = Cultural values,

X4 = Language,

X5 = Cultural taste, and

ε = Error term.

The variables that could cause impact on ICT adoption included: cultural taste, social structure, communication, cultural values and language.

3.6 Validity and Reliability of the Research Tool

Mugenda and Mugenda (2003) describe validity as the accuracy and usefulness of deduced conclusions, which are based on findings. Therefore, validity deals with integrity of the research tool as well as adequacy of variables to provide reliable results consistently. Exploratory factor analysis is used to identify the link between the respondent and the variables.

3.6.1 Exploratory Factor Analysis to Determine Constructs

To enhance the test of validity of factors, Exploratory Factor Analysis (EFA) was preferred as the initial step in the validation process. The research studied seven variables that include: cultural values, demographics, social structure, culture taste, language, communication context and ICT adoption. To identify only meaningful components, Kaiser's (1960) hardy rule of the thumb of keeping only components with Eigenvalues greater than 1 was adopted. The results are as indicated in the Table 3.3.

Table 3.3: Factor analysis table of eigenvalues

Number	Eigenvalue	Percent	20 40 60 80	Cum Percent
1	7.8471	29.064		29.064
2	2.8211	10.449		39.512
3	1.9299	7.148		46.660
4	1.3125	4.861		51.521
5	1.1761	4.356		55.877
6	1.1405	4.224		60.101
7	1.0116	3.747		63.848
8	0.9921	3.674		67.522
9	0.8839	3.274		70.796
10	0.8026	2.973		73.768
11	0.7195	2.665		76.433
12	0.6876	2.547		78.980
13	0.6193	2.294		81.274
14	0.5992	2.219		83.493
15	0.5582	2.067		85.560
16	0.5118	1.896		87.456
17	0.4601	1.704		89.160
18	0.4385	1.624		90.784
19	0.3981	1.474		92.258
20	0.3527	1.306		93.564
21	0.3440	1.274		94.838
22	0.3126	1.158		95.996
23	0.2656	0.984		96.979
24	0.2537	0.940		97.919
25	0.2455	0.909		98.828
26	0.2166	0.802		99.631
27	0.0998	0.369		100.000

The output shows 63.848% of variance cumulatively is explained by 7 variables that had Eigen values larger than 1. This indicates that only seven factors were extracted and significantly observed during the adoption of ICT at AU. However, after inspection of the factors (constructs) solution, it was realised that the questions (must be 3) were not enough for 2 of the 7 constructs as there was need for more precise responses, so a 5-factor solution was chosen which explains 60.10% of the cumulative variance in the data.

3.6.2 The Extraction and Determination of Rotation Method

The Varimax method was used. Maximum likelihood (ML) was applied during extraction and orthogonal was used during rotation. This was the preferred method since further modelling like regression was to be performed. The results are shown in Table 3.4.

Table 3.4: Final communality estimates

B2(a) Organisational cultural values	0.62541
B2(b) The staff personal cultural values	0.58360
B2(c) Cultural groupings based on their home origin	0.43531
B2(d) Employees flexibility in seeking options where dissatisfaction exists regarding their values	0.32199
B2(e) Traditionalist cultural affiliations	0.56880
C2(a) Management involves staff in decision making	0.73977
C2(b) Staff have clearly defined tasks for any project	0.67936
C2(c) Interpersonal relations between individuals is defined by responsibilities to be carried out	0.30020
C2(d) Hierarchies in decision making	0.46687
C2(e) Delegation and Reporting procedure	0.74959
D2(a) Employees focus on meeting targets	0.59168
D2(b) Loyalty to the commission	0.89038
D2(c) Need for commission success	0.88510
D2(d) Participation in social Networks	0.41156
D2(e) National culture	0.28453
E2(a) Groups based language	0.47283
E2(b) Management consideration of language before making communications formal	0.51870
E2(c) Interpersonal language barriers	0.68268
E2(d) Use of language with different/multiple meanings	0.45956
E2(e) Accommodation of different languages to the ICT programmes (SAP, Outlook, Helpdesk) at the AU.	0.40141
F2(a) Use of a common language understandable by employees	0.22984
F2(b) Communication through gestures	0.17221
F2(c) Leadership interaction and information sharing	0.66286
F2(d) Geographical distance impact communication	0.23640
F2(e) Ambiguity of tasks allocated on activity	0.23580
F2(f) The need for detailed information on ICT projects	0.62699
F2(g) The sharing and coordination of information between staff	0.77985

From the extracted 26 items as shown in Table 3.4, 11 had communalities >0.5 which means that they had high proportion of common variance and only communication through gestures had communality of 0.17221. This low factor of less than 0.2 does not load to any specific factor.

3.6.3 The Extraction and Determination of Rotation Method

Factor loadings were produced, and the results are as shown in Table 3.5.

Table 3.5: Extraction and rotation of the factors

Factors	1	2	3	4	5
D2(c) Need for commission success	0.88	0.05	0.24	0.05	0.18
D2(b) Loyalty to the commission	0.87	0.01	0.24	0.05	0.16
D2(a) Employees focus on meeting targets	0.61	0.13	0.21	0.08	0.32
D2(d) Participation in social networks	0.41	0.17	0.12	0.30	0.29
E2(c) Interpersonal language barriers	0.04	0.75	0.15	0.23	0.07
E2(a) Groups based language	-0.0	0.64	-0.1	0.16	0.07
E2(d) Use of language with different/multiple meanings	0.14	0.63	0.09	0.09	0.04
E2(b) Management consideration of language before making communications formal	0.18	0.60	0.20	0.16	0.18
F2(d) Geographical distance impact communication	-0.0	0.44	0.18	0.05	0.03
E2(e) Accommodation of different languages to the ICT programmes (SAP, Outlook, Helpdesk) at the AU.	0.17	0.41	0.37	0.07	0.12
F2(e) Ambiguity of tasks allocated on activity	0.03	0.38	0.22	0.14	0.06
F2(b) Communication through gestures	0.13	0.26	0.08	0.13	0.01
F2(g) The sharing and coordination of information between staff	0.24	0.14	0.79	0.06	0.12
F2(f) The need for detailed information on ICT projects	0.14	0.21	0.74	0.05	0.16
F2(c) Leadership interaction and information sharing	0.26	0.26	0.63	-0.1	0.23
F2(a) Use of a common language understandable by employees	0.15	0.20	0.36	0.07	0.05
B2(b) The staff personal cultural values	0.04	0.16	0.14	0.70	0.04
B2(e) Traditionalist cultural affiliations	0.02	0.11	-0.1	0.56	-0.1
B2(c) Cultural groupings based on their home origin	-0.0	0.15	-0.1	0.55	0.00
B2(d) Employees flexibility in seeking options where dissatisfaction exists with regarding their values	0.11	0.16	0.14	0.45	0.12
B2(a) Organisational cultural values	0.15	0.05	0.25	0.43	0.24
D2(e) National culture	0.29	0.15	0.03	0.35	0.25
C2(e) Delegation and reporting procedure	0.35	0.07	0.20	0.02	0.66
C2(d) Hierarchies in decision making	0.19	0.11	0.16	0.03	0.65
C2(c) Interpersonal relations between individuals is defined by responsibilities to be carried out	0.17	0.17	0.07	0.16	0.36
C2(a) Management involves staff in decision making	0.33	0.17	0.24	0.04	0.24

A factor loading of ≥0.40 is a meaningfully observed item in the research. A loading larger than 0.35 was meaningful for this research. The items in Table 3.5 are grouped as per

each factor. Factor 1 had 4 items grouped in dark background, factor 2 had 7 items grouped in tan background, factor 3 had 4 items grouped in dark background, factor 4 had 5 items grouped in tan background and factor 5 had 3 items grouped in dark background.

3.6.4 Test of Reliability

According to Saunders, Lewis and Thornhill (2007: 202), reliability refers "to the consistency of scores or answers provided by an instrument". The researcher ensured reliability was achieved by pre-testing the questionnaire. The researcher calculated the Cronbach Alpha coefficients for the intended constructs, and those questions that were found unreliable questions were taken out from the final study.

After collecting data for the main research, reliability was tested for the constructs determined with the exploratory factor analysis based on Cronbach's Alpha values. This was given by:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$ ……. Equation (Cronbach, 1951).

An acceptable reliability was considered adequate for this research (Nunnally, 1978). A modified and final questionnaire was developed, and further interpretation of overall Cronbach's Alpha values were described and interpreted. According to Nunnally (1978), "Cronbach's> 0.8 is considered good reliability, between 0.6 and 0.8 is considered acceptable reliability, and Cronbach's alpha < 0.6 is unacceptable reliability". The results for the reliability tests are shown in Table 3.6.

Table 3.6: Coefficients of constructs

Variables/Constructs	Items	Items left out	Cronbach Alpha coefficient	Reliability
1. Cultural values	B2a,b,c,d,e	None	0.690	Acceptable
2. Social structure	C2c,d,e	None	0.700	Acceptable
3. Cultural taste	D2a,b,c,d	None	0.732	Acceptable
4. Language	E2c,a,b,d	None	0.709	Acceptable
5. Communication context	C2d,c,e	None	0.743	Acceptable
6. ICT adoption	G1a,c	G1b	0.700	Acceptable

3.7 Ethical Considerations

Before the start of the research, the participants were informed about their right to decide on participating in the survey. The importance of participation in this study was also emphasised and participants were informed about how their responses were to supplement the outcome of the research.

Some participants were fearful of disclosing information due to the uncertainty of possible consequences. Reassurance was made that all the information received be confidential and identity participants be kept secret or disguised with using pseudonyms. The participants were also informed that the survey had received ethical clearance from University of South Africa (UNISA) and was also endorsed by the AU management. The copy of the letter of approval is attached to the questionnaire.

3.8 Summary

This chapter described the descriptive research design, which the study employs to meet its objectives. Further, the chapter discusses the population of the study, the sampling design and size. The study used questionnaire as the data collection tool, which was administered to all AU staff. Out of the 1,367 staff working at the AU, only 288 completed and successfully submitted their responses.

Reliability scores of the constructs were calculated by averaging the scores. The variables that could cause impact on ICT adoption included cultural values, social structure, culture taste, language and communication context. The tool was tested for reliability, and those questions that were found unreliable were taken out from the final study. To enhance the test of validity of factors, Exploratory Factor Analysis (EFA) was preferred as the initial step in the validation process.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the research findings. First, the chapter discusses the response rate of the research, followed by the general information of the participants like gender, age as well as their education levels. Interpretations are focusing on the five variables, namely, cultural values, social structure, culture taste, language and communication context.

4.2 Demographic Information

This section analyses general information of the participants. According to Babbie (2002), general information in research includes "age, gender and education level. It introduces the researcher to the respondents and enables the respondent to warm up to the main questions of the research".

4.2.1 Sex of the Participants

The research requested the gender of the participants. Figure 4.1 shows the research findings. Most of the AU staff were male (56.6%), followed by female (42.7%). The results further revealed that 0.7% of the staff chose not to disclose their sex information.

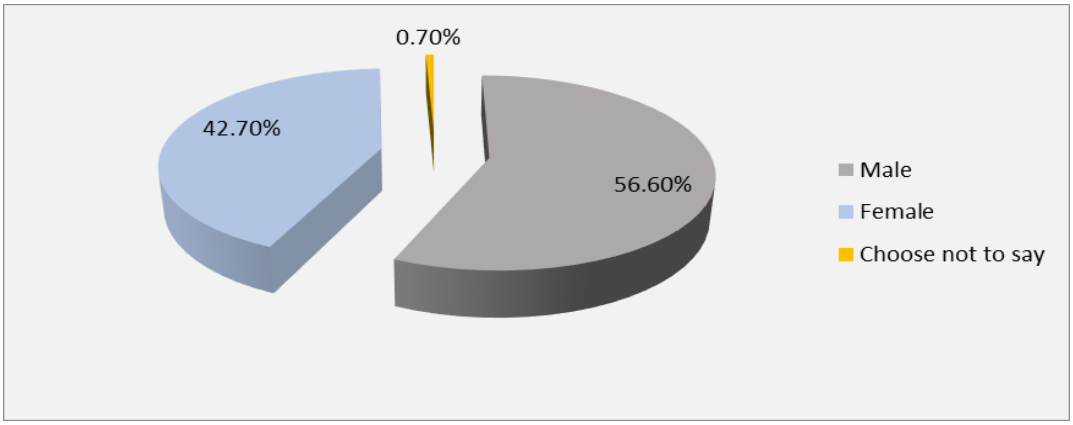

Figure 4.1: Sex of participants

4.2.2 Age

Figure 4.2 shows the findings of the age of AU staff. A majority (45.83%) were between 36 and 45 years, followed by 24.31% aged between 25 and 35 years, 21.18% aged were between 46 and 55 years, whereas 1.74% of them were over 60 years of age, and 0.69% were below 25 years.

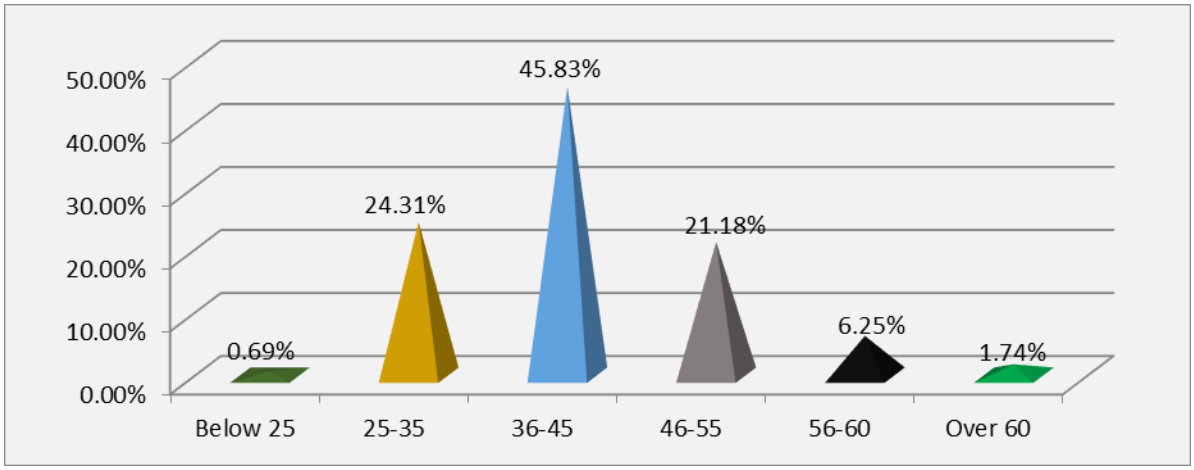

Figure 4.2: Age of the participants

4.2.3 Responses from Staff Numbers Employed at AU Branches

The research sought to identify the number of AU staff that worked in each AU branch. The results indicate that a majority (76.74%) work at the AU headquarters, 15.28% worked in the regional offices of the AU, while 0.35% worked in the Liaison Offices. A percentage of 7.64% of the total participants worked for the AU organs. The results are summarised on Table 4.1.

Table 4.3: Responses from staff employed at AU branches

Description	Frequency	Percentage
1. Headquarters	221	76.74%
2. Regional office/Technical office	44	15.28%
3. Liaison Office	1	0.35%
4. AU Organs	22	7.64%
Total	**288**	**100.00%**

4.2.4 Staff Appointment Categories

The findings shown in Figure 4.3 indicate that most AU staff (59.72%) belonged to the professional category. Those in the general service category were 34.03%, whereas 6.25% were in the management category.

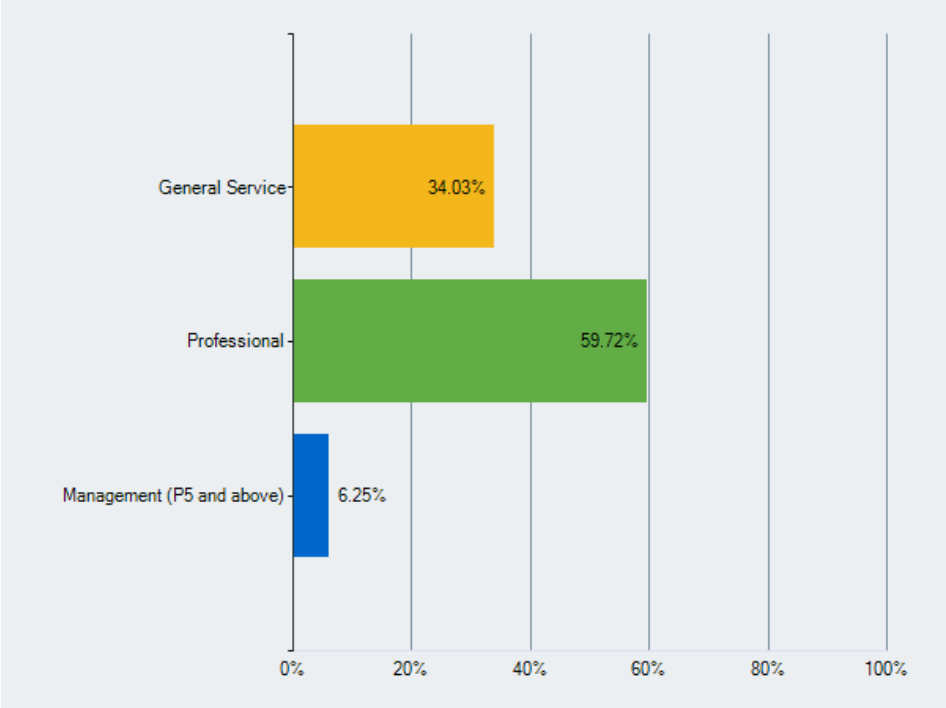

Figure 2.3: Staff category

4.2.5 Years of Experience at the AU

The research sought to find the number of years an AU staff member had worked for the African Union. Figure 4.4 indicates a majority (49.31%) had worked for the AU between 0 and 5 years, 35.07% for 6 to 10 years, 9.03% between 11 to 15 years, 5.12% between 16 to 20 years, and 1.39% more than 20 years.

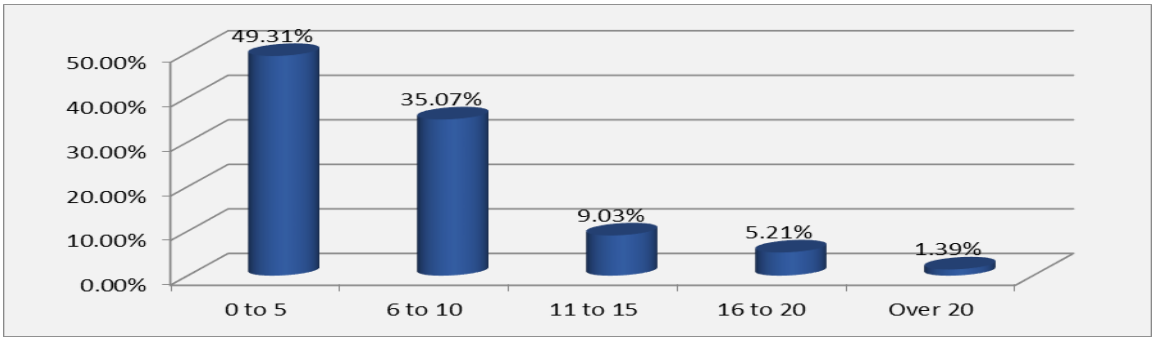

Figure 4.4: Years of experience working in the AU

4.2.6 Levels of Education of Staff

Results in Table 4.2 indicate that 5.21% of AU staff had a diploma level of education, 21.53% had an undergraduate education, whereas a majority (73.26%) had a postgraduate level of education.

Table 4.2: Educational levels of AU staff

Description	Frequency	Percentage
1. Below Secondary Certificate	0	0.00%
2. Secondary / High School Certificate	0	0.00%
3. Diploma	15	5.21%
4. Undergraduate	62	21.53%
5. Postgraduate	211	73.26%
Total	**288**	**100.00**

4.2.7 Regional African Origins of Staff

AU staff were asked to indicate their regions of origin within Africa. Results as indicated by Figure 4.5 indicate that a majority are from East Africa (56.6%), while 3.47% were from North Africa, 18.40% from the southern African region, 14.93% from West Africa and the remaining 6.6% from the Central African region.

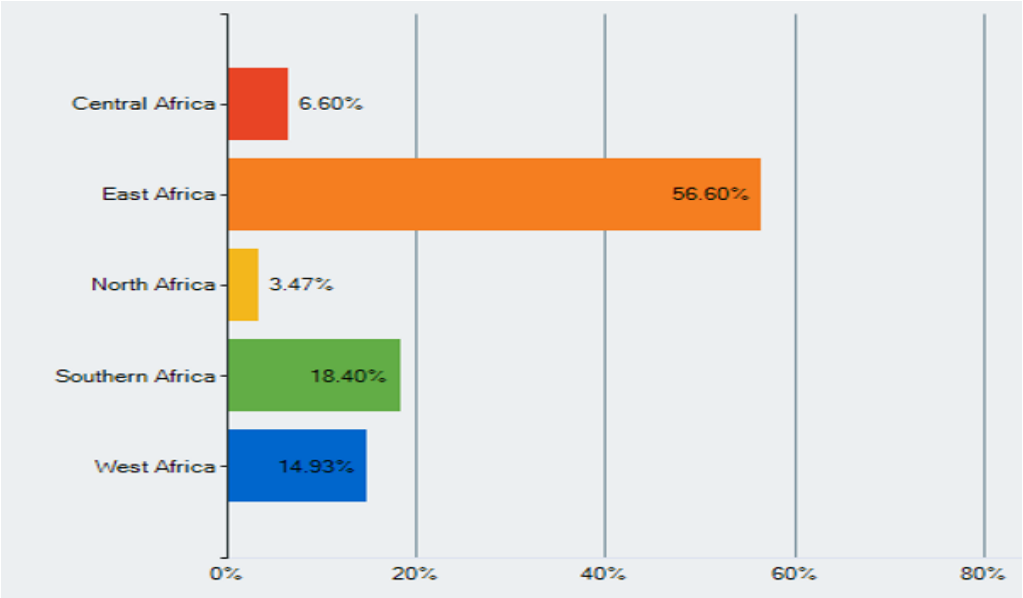

Figure 4.5: Regions of origin for AU staff

4.2.8 Most Fluent AU Working Language

The research sought to establish the most frequently used language by AU staff while working. The findings as per Table 4.3 indicate that 86.46% are English speakers, 10.42% are French speakers, 2.08% are Arabic speakers, while 1.04% are Portuguese speakers.

Table 4.3: Most fluent working languages

Description	Frequency	Percentage
1. English	249	86.46%
2. French	30	10.42%
3. Arabic	6	2.08%
4. Portuguese	3	1.04%
Total	**288**	**100.00**

4.3 Descriptive Statistics

The following section outlines descriptive statistics for the five factors, namely, cultural values, social structure, cultural taste, language, and communication.

4.3.1 Effect of Cultural Values on Adoption of ICT at the AU

Cultural values effect on ICT adoption is as displayed in Figure 4.6. Most AU staff (55.21%) agreed that cultural values impact ICT adoption, 13.54% disagreed that cultural

values affect ICT adoption, while 31.25% of the participants were not sure whether cultural values changed ICT adoption or not.

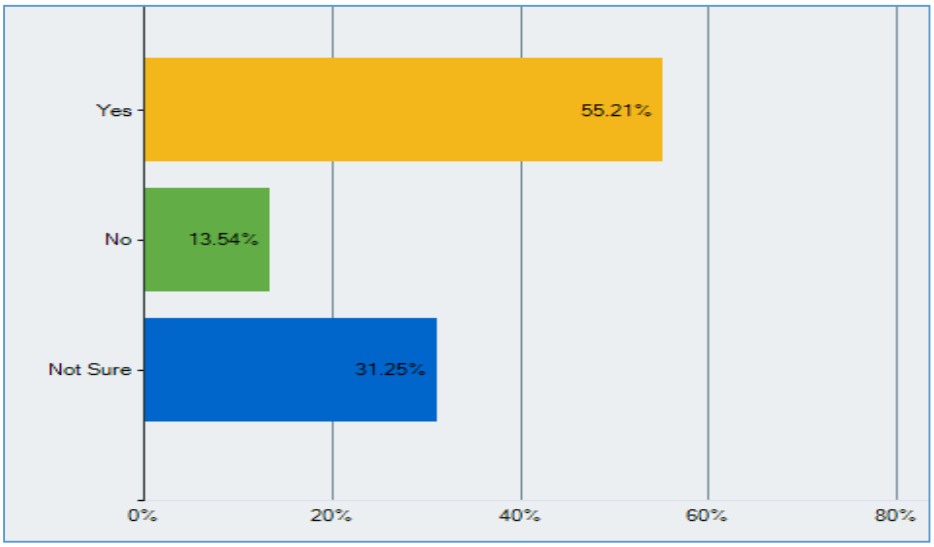

Figure 4.6: Cultural values and ICT adoption

4.3.2 Importance of African Cultural Values at the AU

Table 4.4 shows the responses on the importance of organisational cultural values. The table indicates that 47.92% of the participants considered organisational cultural values to be very important, whereas 23.26% said organisational cultural values were extremely important.

Based on the influence of other factors such as personal cultural values, cultural groupings, and traditional cultural affiliation on the adoption of new technology, the results also indicated that:

a) Personal cultural values are moderately important (24.65%), while others considered it very important (43.40%), and only 10.42% agreed the aspect is extremely important.
b) Cultural groupings based on staff origin were moderately important in the AU by 29.86% of participants, 21.88% indicated they were very important, while 6.6% said they were extremely important.
c) In terms of traditional cultural affiliation, 20.14% of the participants said that they were moderately important, 23.96% very important, while 4.17% said that the aspect was extremely important.

Table 4.4 shows the preferences.

Table 4.4: Cultural values

Description	1	2	3	4	5	6	7
1. Organisational cultural values	2.43%	2.43%	4.17%	8.68%	11.11%	47.92%	23.26%
2. Staff's personal cultural values	3.13%	3.13%	4.86%	10.42%	24.65%	43.40%	10.42%
3. Cultural groupings based on their home origin	6.94%	6.94%	6.60%	21.18%	29.86%	21.88%	6.60%
4. Employees flexibility in seeking options where dissatisfaction exists regarding their values	4.51%	3.82%	6.25%	19.44%	21.88%	34.38%	9.72%
5. Traditionalist cultural affiliations	7.99%	11.11%	6.94%	25.69%	20.14%	23.96%	4.17%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

4.3.2.1 Importance of African cultural values

From Figure 4.7 and Table 4.5 (median = 5 and sd = 1.30), meaning most AU staff feel cultural values is a moderately important component at AU.

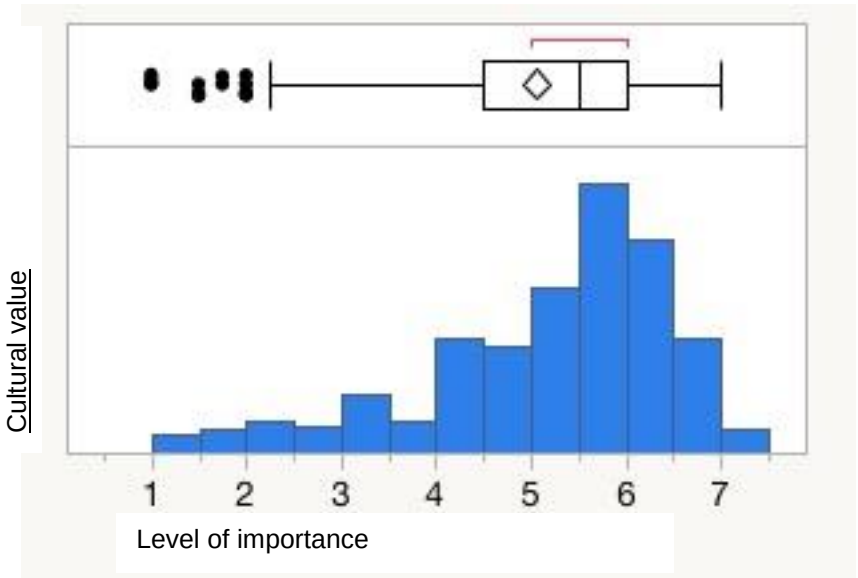

Figure 4.7: Box plot and histogram of the distribution of cultural value

Table 4.5: Summary statistics for cultural tastes

Cultural value	Level of importance
Mean	5.0538194
Std Dev.	1.3000145
Std Err Mean	0.0766041
Upper 95% Mean	5.2045965
Lower 95% Mean	4.9030424
N	288
Skewness	-1.103039
Kurtosis	0.8626021

4.3.3 Impact of Social Culture on ICT Adoption at the AU

The study aimed to identify the impact for social culture (values and belief agreed upon by a certain population) on ICT adoption in AU. The findings, as shown in Figure 4.8, reveal 56.25% of AU staff agreed that social cultural aspects have an impact on the adoption of ICT innovation, 17.01% disagreed that social culture had any implications on ICT adoption, while 24.31% were uncertain.

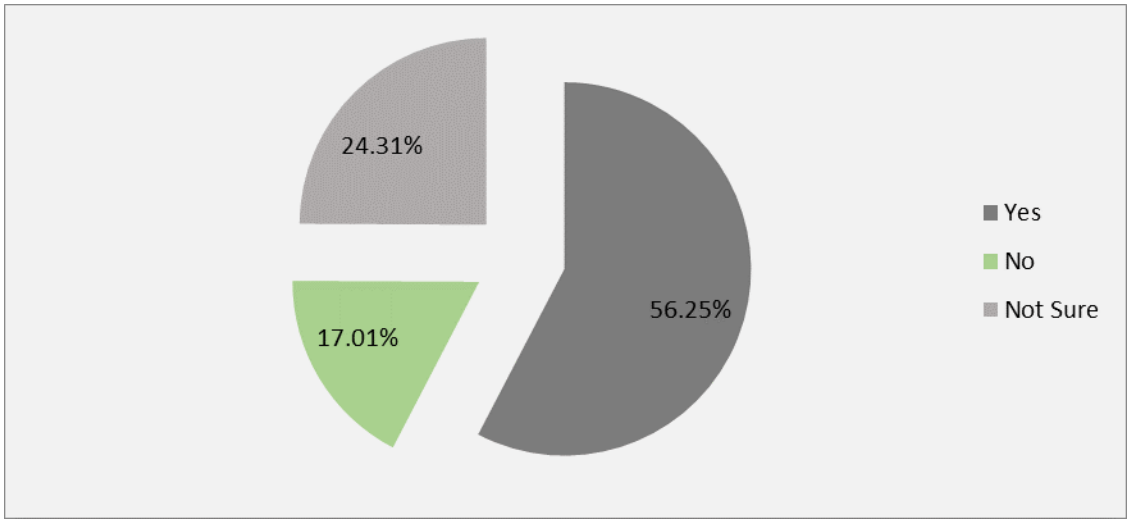

Figure 4.8: Effects of social culture on the adoption of ICT

4.3.3.1 Importance of social culture

The study sought to discover the importance of socio-cultural aspects which include staff involvement in decision making, interpersonal relations in the line of duty, use of hierarchies for decision-making, and delegation and reporting procedures.

The results, as shown in Table 4.6, reveal that the AU staff believe:

a) Management's involvement of staff in decision-making is significant (38.19%), whereas 19.79% think it is critical in the AU. In terms of the team having clearly defined tasks for any project, most staff (36.81%) said it was very important to the AU, whereas 26.39% said it was essential.
b) 24.31% of AU staff felt that interpersonal relations among individuals through their responsibilities is moderately essential, 30.56% believed it was significant, whereas 9.38% said it was crucial to the AU.
c) On the aspect of using hierarchies for decision-making, 46.18% of staff said that the element is significant, whereas 16.32% said it was vital to the AU.
d) On the delegation and reporting procedures, 46.88% of staff said this aspect was significant, whereas 18.06% said that the element was vital. Table 4.6 summarises and categorises the five aspects.

Table 4.6: Importance of social culture

Description	1	2	3	4	5	6	7
1. Management involves staff in decision making	4.17%	6.25%	6.60%	10.76%	14.24%	38.19%	19.79%
2. Staff have clearly defined tasks for any project	2.08%	3.13%	6.25%	12.15%	13.19%	36.81%	26.39%
3. Interpersonal relations between individuals are defined by responsibilities to be carried out	5.90%	3.82%	5.90%	20.14%	24.31%	30.56%	9.38%
4. Hierarchies in decision making	2.43%	3.13%	2.43%	8.33%	21.18%	46.18%	16.32%
5. Delegation and reporting procedure	2.78%	2.78%	3.47%	9.38%	16.67%	46.88%	18.06%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

4.3.3.2 Importance of social structure by distribution

Figure 4.9 shows a histogram and box plot (median = 5.3 and sd = 1.12) which reveal most AU staff regard social culture as an essential component at AU as seen in Likert scale distribution.

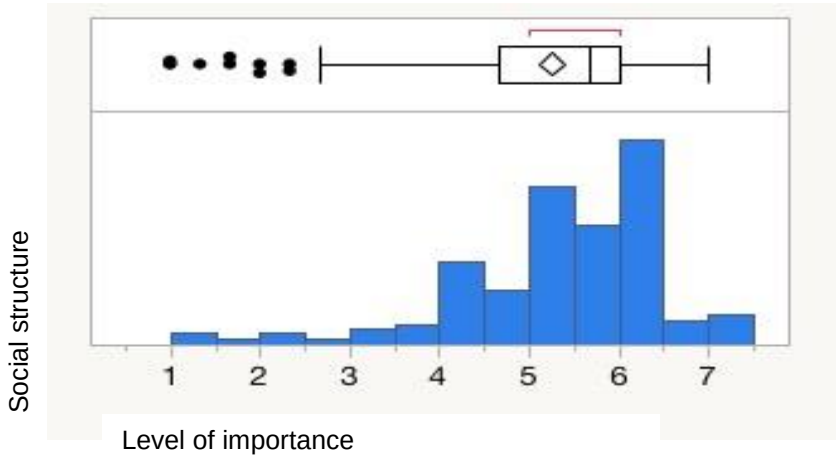

Figure 4.9: Box plot and histogram for social structure

Table 4.7: Summary statistics for social structure

Social structure	Level of importance
Mean	5.2534722
Std Dev	1.1169459
Std Err Mean	0.0658167
Upper 95% Mean	5.3830168
Lower 95% Mean	5.1239276
N	288
Skewness	-1.336092
Kurtosis	2.4865909

4.3.4 Impact of Cultural Tastes on ICT Adoption at the AU

The study wanted to discover the role played by cultural tastes among AU staff in acceptance and promotion of new ICT in AU operations. The views of staff on the impact of cultural taste on ICT adoption are as shown in Figure 4.10. Their observations reveal that 47.57% agreed cultural tastes impacted on the acceptance of new ICT applications in the AU, 18.40% disagreed, whereas 34.03% said that they neither agreed nor disagreed.

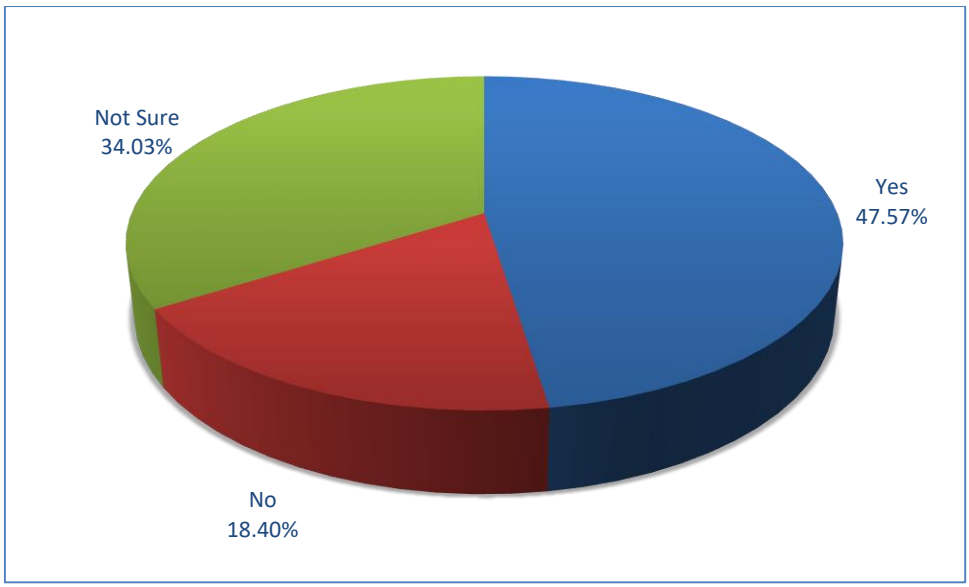

Figure 4.10: The influence of cultural tastes on ICT adoption

4.3.4.1 Importance of cultural tastes

The research also sought to establish the importance of individual and collective cultural activities among AU staff in terms of five aspects, namely, meeting targets, loyalty, need for AU success, participation in social networks, and national culture. The results, as shown in Table 4.8, indicate that:

- Employees focus on meeting targets is significant (34.03%) and critical (12.85%);
- Loyalty to the AU is very important (32.64%) and extremely important (17.36%);
- Need for AU's success is very important (33.68%) and extremely important (23.26%);
- Participation of the employees in social networks was considered very important (33.33%); and
- National culture is very important (32.64%) and extremely important (7.29%).

Table 4.8 shows the five factors: -

Table 4.8: Importance of cultural tastes

Description	1	2	3	4	5	6	7
1. Employees focus on meeting targets	3.13%	5.90%	7.99%	14.58%	21.53%	34.03%	12.85%
2. Loyalty to the commission	3.82%	7.29%	4.86%	16.32%	17.71%	32.64%	17.36%
3. Need for commission success	2.08%	6.25%	4.86%	13.54%	16.32%	33.68%	23.26%
4. Participation in social networks	2.78%	5.90%	6.94%	19.44%	22.92%	33.33%	8.68%
5. National culture	1.39%	5.56%	5.90%	26.39%	20.83%	32.64%	7.29%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

4.3.4.2 Importance of cultural taste by distribution

Figure 4.11 and Table 4.9 show a median = 5.1 and sd = 1.3, which indicate the distribution of ‘cultural taste' for AU staff is skewed to the right. Most AU staff feel that cultural taste is a moderately important component at AU.

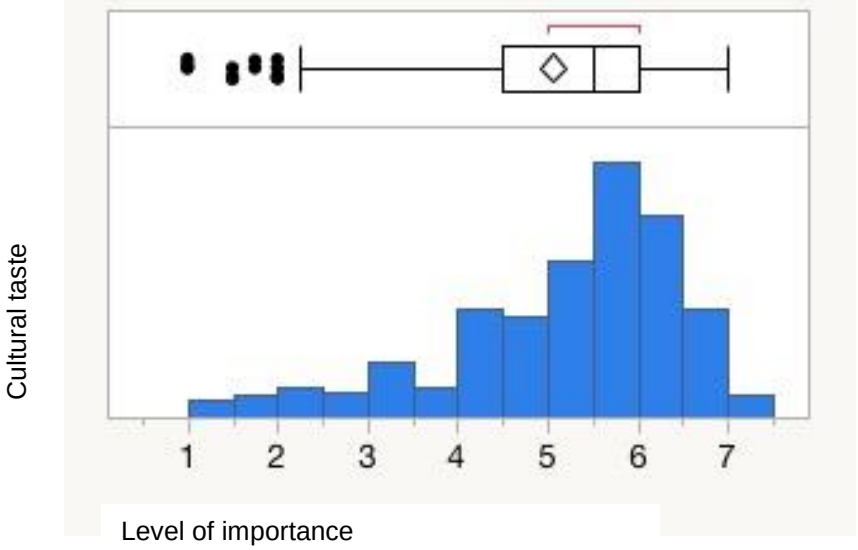

Figure 3.11: Box plot and histogram of cultural taste

Table 4.9: Summary statistics for cultural taste

Cultural taste	Level of importance
Mean	5.0538194
Std Dev	1.3000145
Std Err Mean	0.0766041
Upper 95% Mean	5.2045965
Lower 95% Mean	4.9030424
N	288
Skewness	-1.103039
Kurtosis	0.8626021

4.3.5 Impact of Language on ICT Adoption at the AU

The AU staff responses (Figure 4.12) show that a majority (64.24%) of AU staff indicated that language influences adoption of ICT in the AU, 21.18% of them disagreed, whereas 14.58% neither agreed nor disagreed (Figure 4.12).

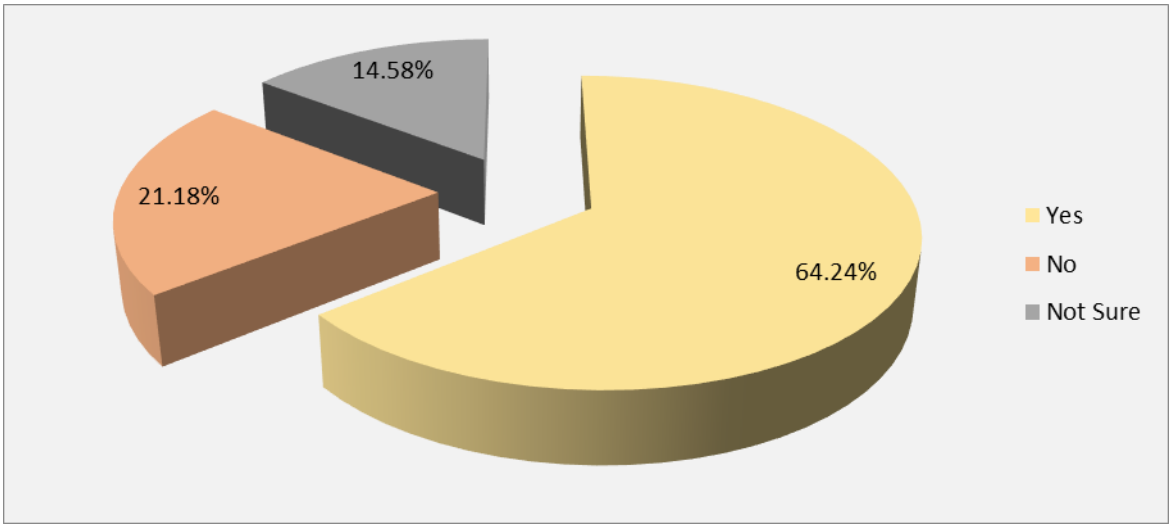

Figure 4.12: The effect of language on the adoption of ICT

a) Importance of language

The staff rated the levels of importance of language in AU in terms of five aspects. The results (Table 4.10) revealed that 29.51% of staff believe that group-based language is very important, whereas 10.76% said that it was extremely important to the AU. On the management's decision to make language communications formal, 14.93% said it was important. On interpersonal language barriers, a majority (34.03%) rated these as very important, whereas 13.89% said that they were extremely important. More so, 29.51% of them agreed that the use of different languages influenced interpretations, and 10.42% considered it extremely important. In terms of the accommodation of different languages

within ICT programmes, 36.81% agreed that this aspect was very important, whereas 21.53% said that the element was very important to the AU.

Table 4.10: The effect of languages

Description	1	2	3	4	5	6	7
1. Group-based language	4.17%	6.25%	6.60%	22.57%	20.14%	29.51%	10.76%
2. Management consideration of language before making communications formal	3.13%	5.56%	3.47%	11.46%	14.93%	42.01%	19.44%
3. Interpersonal language barriers	2.43%	5.21%	4.17%	18.06%	22.22%	34.03%	13.89%
4. Use of language with different/multiple meanings	4.51%	5.90%	4.51%	22.92%	22.22%	29.51%	10.42%
5. Accommodation of different languages to the ICT programmes (SAP, Outlook, Helpdesk) at the AU	6.25%	6.25%	4.51%	12.15%	12.50%	36.81%	21.53%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

b) Importance of languages in AU by distribution

From Figure 4.13 and Table 4.11, median = 5.2 and sd = 1.14. The median tends to 5 which is moderately important according to the Likert scale. It can also be seen that the distribution for 'language' for participants at the AU is skewed in that most participants feel it is a moderately important component at AU.

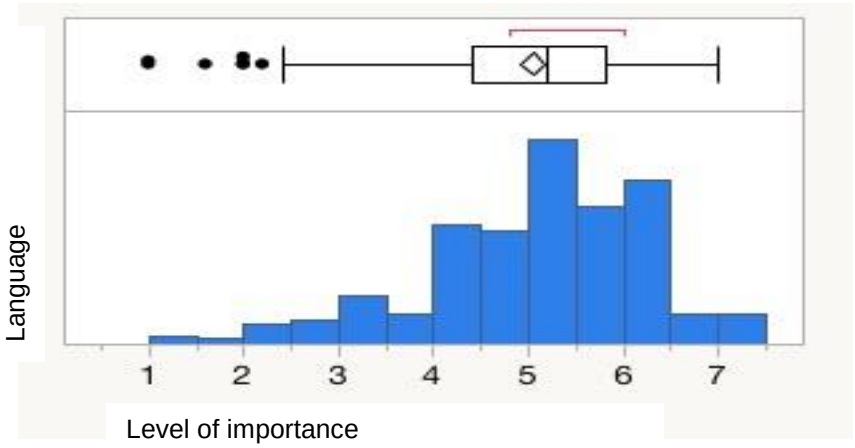

Figure 4.13: Box plot and histogram of importance of languages

Table 4.11: Summary statistics for importance of languages

Mean	5.0416667
Std Dev	1.1452979
Std Err Mean	0.0674873
Upper 95% Mean	5.1744996
Lower 95% Mean	4.9088338
N	288
Skewness	-0.82452
Kurtosis	0.7469143

4.3.6 Impact of Communication Context on ICT Adoption at the AU

The research was also to find out the effect of communication context in enhancing the adoption of ICT transformation at the AU. The participants' views as per Figure 4.1 revealed that most participants (76%) agreed that the communication context improved the adoption of ICT, 9% said it does not impact on ICT adoption, whereas 15% reported that they were not sure.

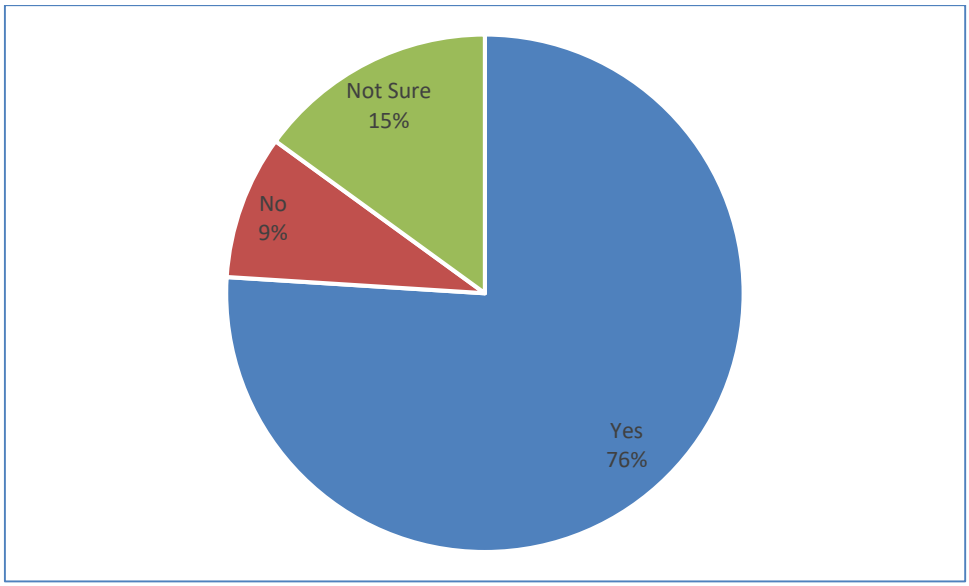

Figure 4.14: The effect of communication on ICT adoption

a) Importance of the communication context

The participants' views on the importance of the communication context, namely: a common language, gestures, leadership interaction and information sharing, geographical distance, the ambiguity of tasks, sharing and coordination of information between staff at the AU are as follows:

- In terms of a common language understandable to the employees, the research established that 43.75% of the participants considered the aspect as very important to the AU, while 30.21% said it was extremely important.

- On communicating through gestures, 17.01% of the total participants said that the aspect was very important, whereas 3.13% said it was extremely important.
- Leadership interaction and information sharing were also considered to be very important by 48.61% participants, whereas 24.31% said the aspect was extremely important.
- On the effects of geographical distance on communication, 36.11% of the participants said it was very important.
- In terms of the ambiguity of tasks allocated on activities, 32.29% participants indicated that the challenge was a very important issue in the AU, whereas 11.11% said it was an extremely important challenge.
- On sharing and coordination of information between staff, 45.49% of the participants said that it was very important to the AU, while 34.03% of the participants noted the aspect is of extreme importance. Table 4.12 summarises the results.

Table 4.12: Importance of communication variables at the AU

Description	1	2	3	4	5	6	7
1. Use of a common language understandable by employees	1.74%	2.43%	2.43%	5.90%	13.54%	43.75%	30.21%
2. Communication through gestures	11.46%	14.58%	8.33%	25.00%	20.49%	17.01%	3.13%
3. Leadership interaction and information sharing	1.74%	3.82%	2.43%	7.64%	11.46%	48.61%	24.31%
4. Geographical distance impact communication	3.13%	5.90%	7.64%	17.01%	21.18%	36.11%	9.03%
5. Ambiguity of tasks allocated on activity	4.86%	2.78%	5.21%	26.74%	17.01%	32.29%	11.11%
6. The need for detailed information on ICT projects	1.04%	2.43%	3.13%	10.76%	12.50%	42.71%	27.43%
7. The sharing and coordination of information between staff	1.74%	2.78%	2.43%	6.25%	7.29%	45.49%	34.03%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

b) Importance of communication context by distribution

From Figure 4.15 and Table 4.13 where mean = 5.8, sd = 1.0, it was found that the normality test for a communication context for participants at AU was skewed as most staff consider communication context as a significant component at AU.

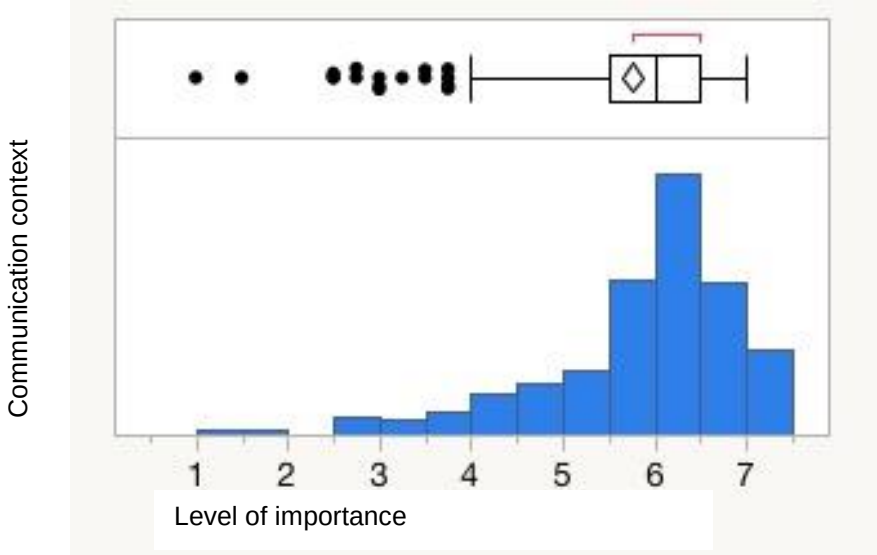

Figure 4.15: Box plot and histogram for communication context

Table 4.13: Summary statistics for communication context

Communication context	Level of importance
Mean	5.7543403
Std Dev	1.0406495
Std Err Mean	0.0613209
Upper 95% Mean	5.8750359
Lower 95% Mean	5.6336446
N	288
Skewness	-1.497435
Kurtosis	2.7991257

4.3.7 Frequent Use of ICT Services at the AU

The results revealed that 18.06% of the AU staff used SAP employee services such as payslips and appraisals to a vast extent, whereas 29.17% said they always used the service (Table 4.14). The results also showed that 15.28% of the staff used helpdesk services to a considerable extent.

Table 4.14: ICT adoption services

Description	1	2	3	4	5	6	7
1. SAP employee services	4.17%	2.78%	6.94%	21.88%	17.01%	18.06%	29.17%

(Payslip, Leave of Absence, Travel Request, Appraisal)							
2. Email/ Outlook services	0%	0%	0%	1.39%	5.56%	10.42%	82.64%
3. Helpdesk services (MIS, HRM, PBFA, any other)	4.51%	7.99%	11.81%	24.31%	18.40%	15.28%	17.71%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

a) Frequency of use of ICT services by distribution

Notable is the skew of the distribution for the frequency of use of ICT services for AU staff from Figure 4.16 and Table 4.15, median = 4.9, which means 'very important' as per the Likert scale and sd = 1.5. Most AU staff agreed to a 'very large extent' that they frequently use ICT services (Figure 4.16).

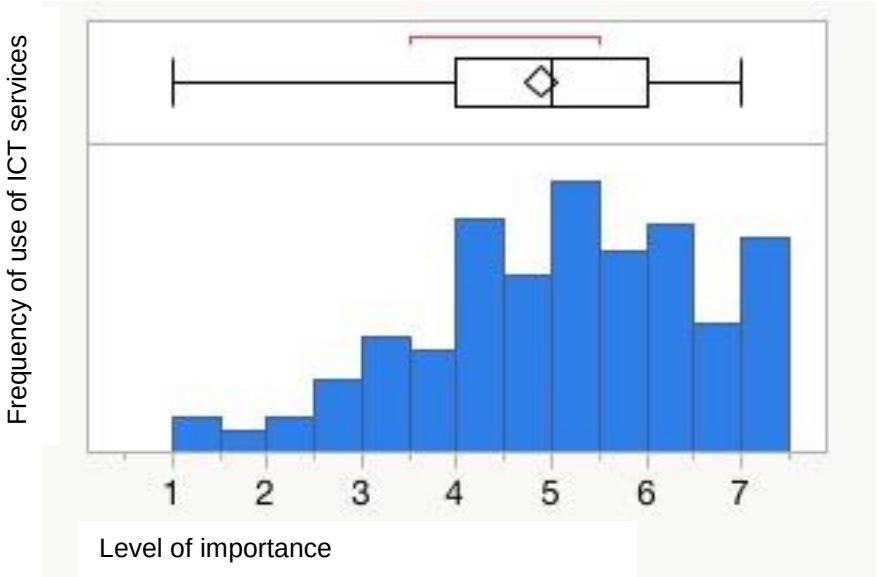

Figure 4.16: Frequency of use of ICT services

Table 4.15: Summary statistics for use of ICT services

Use of ICT service	Level of importance
Mean	4.8819444
Std Dev	1.4500824
Std Err Mean	0.0854469
Upper 95% Mean	5.0501266
Lower 95% Mean	4.7137623
N	288

Skewness	-0.46062
Kurtosis	-0.282543

4.3.8 Ease of Using ICT Services at the AU

The research sought to elicit the AU staff's views on the straightforwardness of using ICT services and as shown in Table 4.16, 29.17% of staff 'agreed' that SAP employee services were straightforward, while 18.75% 'strongly agreed'. In terms of the ease of using email services, 37.5% of the AU staff 'agreed', whereas 52.78% 'strongly agreed'. On the straightforwardness of the use of helpdesk services, 29.51% of the AU staff 'agreed', while 18.40% 'strongly agreed' with the statement.

Table 4.16: Ease of use with ICT facilities

Description	1	2	3	4	5	6	7
1. SAP employee services are straightforward to use	2.43%	3.47%	11.46%	9.03%	25.69%	29.17%	18.75%
2. Email/Outlook services are straightforward to use	0%	0.35%	0.69%	2.43%	6.25%	37.50%	52.78%
3. Helpdesk services are straightforward to use	1.39%	5.21%	7.64%	12.85%	25.00%	29.51%	18.40%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

a) Ease of use of ICT services by distribution at the AU

From Figure 4.17 and Table 4.17, median = 5.6 towards 6 meaning 'very important ' as per the Likert scale, sd = 1.0, the distribution level for the straightforward use of ICT services for AU staff is skewed. Most staff 'agree' that ICT services are straightforward. The findings are as shown in Figure 4.17.

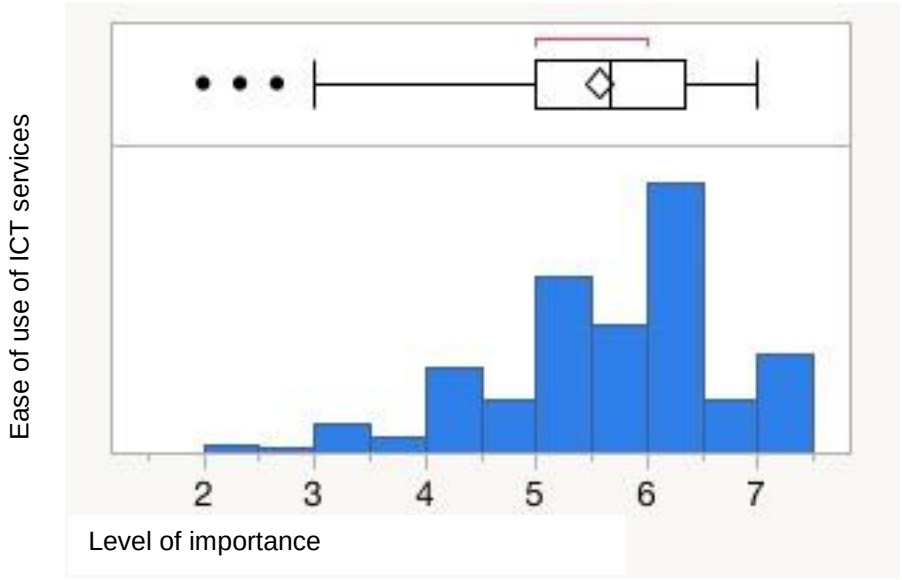

Figure 4.17: Ease of use of ICT services

Table 4.17: Summary statistics for ease of use of ICT services

Ease of use of ICT services	**Level of importance**
Mean	5.5659722
Std Dev	1.0095784
Std Err Mean	0.05949
Upper 95% Mean	5.6830642
Lower 95% Mean	5.4488802
N	288
Skewness	-0.779341
Kurtosis	0.4778624

4.3.9 Confidence Levels on ICT Services at the AU

The research sought to establish the AU staff's level of confidence with the ICT services adopted at the AU. From Table 4.18, 34.38% of staff 'agree' that they are comfortable with the SAP employee services, whereas 33.68% 'strongly agree'. In terms of confidence levels with the email services, 30.90% of staff 'agreed', while 62.85% 'strongly agreed'. On the confidence with the ability to use helpdesk, 28.13% of staff 'agreed', whereas 35.42% 'strongly agreed'.

Table 5: Confidence levels on use of ICT services

Description	1	2	3	4	5	6	7
1. Confidence to use SAP employee services	1.39%	3.82%	5.56%	6.94%	14.24%	34.38%	33.68%
2. Ability to use Email / Outlook services	0.35%	0%	0.69%	1.39%	3.82%	30.90%	62.85%
3. Confident to use Helpdesk services	1.74%	3.82%	4.51%	9.03%	17.36%	28.13%	35.42%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

a) Confidence levels on ICT levels by distribution

Figure 4.18 and Table 4.19 show a histogram, box plot and summary statistics (median = 6 which means ‘very important' as per the Likert scale and sd = 1.0). The distribution for the ‘confidence levels' of AU staff is skewed to the right. Most staff 'agree' that they are confident in the use of the ICT services provided.

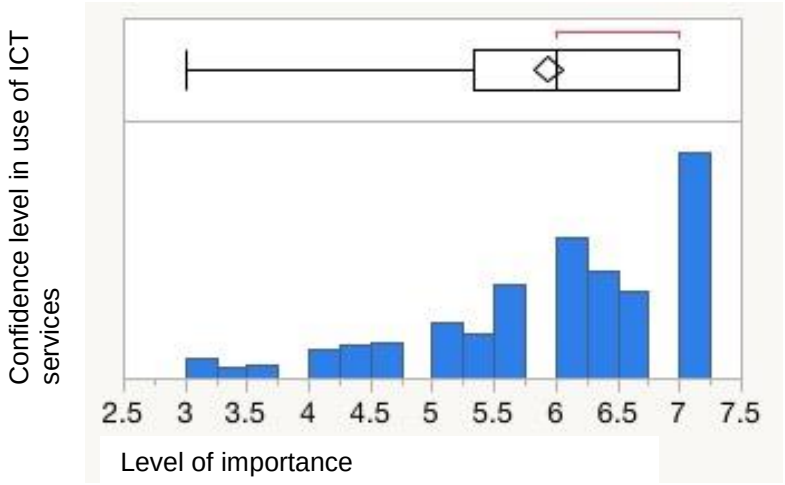

Figure 4.18: Level of confidence in ICT services provided

Table 4.19: Summary statistics on level of confidence in ICT services provided

Level of confidence in ICT services	Level of confidence
Mean	5.9386574
Std Dev.	1.0176998
Std Err Mean	0.0599685
Upper 95% Mean	6.0566913
Lower 95% Mean	5.8206235
N	288
Skewness	-0.995213
Kurtosis	0.3953712

4.3.10 ICT Support at the AU

The staff views were sought on the support they got on the use of ICT services at the AU. Results in Table 4.20 indicate, 35.76% of staff 'agreed' that they got adequate support on the use of SAP employee services, whereas 18.06% 'strongly agreed' with the help that they got on SAP. On the level of support on use of email services, 46.53% of staff acknowledged that the support was satisfactory, whereas 22.92% 'strongly agreed' that it was adequate. On the satisfaction level for support given on the use of helpdesk services, 27.08% of AU staff 'agreed', whereas 15.63% 'strongly agreed'.

Table 4.20: ICT support at AU

Description	1	2	3	4	5	6	7
1. The level of ICT support I get on SAP employee services is satisfactory	3.47%	2.08%	5.56%	10.07%	25.00%	35.76%	18.06%
2. The level of ICT support I get on email/outlook services is satisfactory	1.04%	1.74%	1.39%	6.94%	19.44%	46.53%	22.92%
3. The level of ICT support I get on helpdesk services is satisfactory	3.47%	3.82%	5.21%	15.63%	29.17%	27.08%	15.63%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

a) Distribution of ICT support

From the Figure 4.19 and Table 4.21, median = 5.4 towards 6 which means 'very important ' as per the Likert scale and sd = 1.16. The distribution for 'ICT support' for AU staff is skewed to the right. Most AU staff 'agree' that level of ICT support is satisfactory.

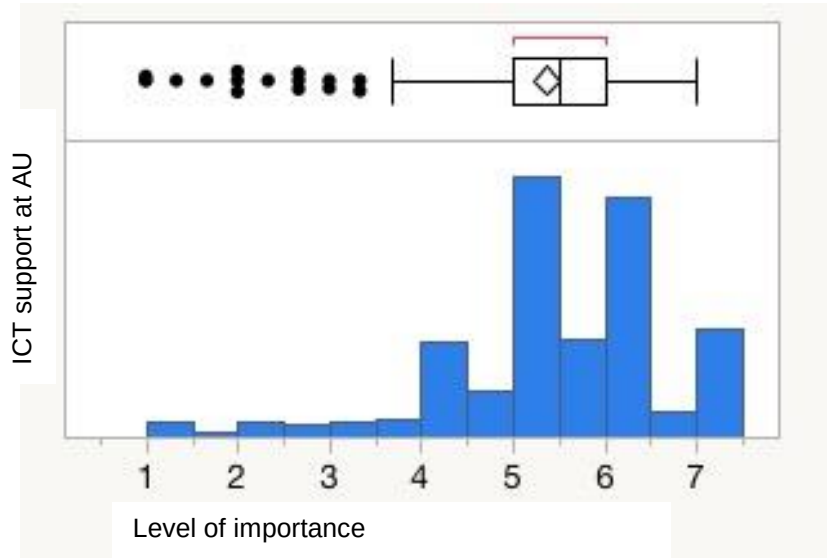

Figure 4.19: Distribution of ICT support

Table 4.21: Summary statistics for distribution of ICT support

Mean	5.369213
Std Dev.	1.1579922
Std Err Mean	0.0682353
Upper 95% Mean	5.5035181
Lower 95% Mean	5.2349078
N	288
Skewness	-1.154548
Kurtosis	2.2518456

4.3.11 Efficiency of the ICT Services at the AU

The research sought to establish staff's views on the enhancement of performance through efficiency, productivity, and service delivery because of ICT services at the AU. The results in Table 4.22 show that 34.72% of staff 'agreed' that SAP employee services enhanced efficiency and service delivery, whereas 23.61% of the participants 'strongly

agreed'. On the effectiveness of email services, 42.01% of staff 'agreed', whereas 34.03% of the participants 'strongly agreed'. Lastly, on the ability of helpdesk services to enhance efficiency, productivity and service delivery, 31.6% of the staff 'agreed', whereas 17.36% 'strongly agreed'.

Table 6: ICT efficiency, productivity and service delivery

Description	1	2	3	4	5	6	7
1. SAP employee services have increased efficiency, productivity and service delivery	2.43%	1.04%	3.13%	15.63%	19.44%	34.72%	23.61%
2. Email /Outlook services have increased efficiency, productivity and service delivery	0.35%	0.69%	2.08%	6.94%	13.89%	42.01%	34.03%
3. Helpdesk services have increased efficiency, productivity and service delivery	2.08%	1.39%	6.25%	18.75%	22.57%	31.6%	17.36%

Key: 1) Not at all important; 2) Low importance; 3) Slightly important; 4) Neutral; 5) Very important; 6) Extremely important

a) Distribution of ICT efficiency, productivity and service delivery

Figure 4.20 and Table 4.23 show median = 5.6 towards 6, which means 'very important' as per the Likert scale and sd = 1.1. The distribution for ICT efficiency, productivity and service delivery for participants at AU skews to the right. Most staff 'agree' ICT services have increased efficiency, productivity and service delivery at the AU.

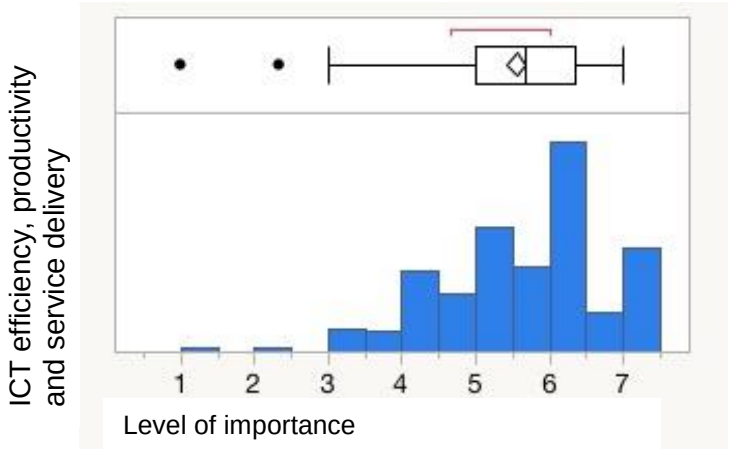

Figure 4.20: ICT efficiency, productivity and service delivery

Table 4.23: Summary statistics for ICT efficiency, productivity and service delivery

ICT efficiency, productivity and service delivery	Level of importance
Mean	5.5509259
Std Dev	1.0524896
Std Err Mean	0.0620185
Upper 95% Mean	5.6729948
Lower 95% Mean	5.4288571
N	288
Skewness	-0.706831
Kurtosis	0.5799156

4.4 Inferential Statistics

Since the demographics of the study participants are already discussed in section 4.2, this section describes the relationships and regression analysis of the factors associated with ICT adoption. The elements are fitted into a model and analysed.

4.4.1 Relationships between Factors and ICT Adoption

The relationship between cultural taste, language, communication context, cultural values and social structure with ICT adoption was assessed using correlation analysis. Table 4.24 and 4.25 show the correlation coefficients and probability values.

Table 4.24: Correlation coefficients

	ICT adoption	Culture taste	Language	Communication context	Cultural values	Social structure
1. ICT adoption	1.0000	0.1161	-0.0696	0.0794	0.0531	0.0422
2. Culture taste	0.1161	1.0000	0.3326	0.5173	0.2699	0.5583
3. Language	-0.0696	0.3326	1.0000	0.4508	0.3624	0.3398
4. Communication context	0.0794	0.5173	0.4508	1.0000	0.2164	0.4355
5. Cultural values	0.0531	0.2699	0.3624	0.2164	1.0000	0.2386
6. Social structure	0.0422	0.5583	0.3398	0.4355	0.2386	1.0000

Table 4.25: Correlation probability values

	ICT adoption	Culture taste	Language	Communication context	Cultural values	Social structure
1. ICT adoption	<.0001	0.0490	0.2389	0.1789	0.3696	0.4756
2. Culture taste	0.0490	<.0001	<.0001	<.0001	<.0001	<.0001
3. Language	0.2389	<.0001	<.0001	<.0001	<.0001	<.0001
4. Communication context	0.1789	<.0001	<.0001	<.0001	0.0002	<.0001
5. Cultural values	0.3696	<.0001	<.0001	0.0002	<.0001	<.0001
6. Social structure	0.4756	<.0001	<.0001	<.0001	<.0001	<.0001

From Table 4.26, cultural taste is the only variable that has a statistically significant relationship at p-value below 0.05 (p=0.0490).

Table 4.26: Partial correlation between ICT adoption and cultural taste

	ICT adoption	Cultural taste	Language	Communication context	Cultural values	Social structure
ICT adoption	--	0.0937	-0.1405	0.0701	0.0625	-0.0187
Cultural taste	0.0937	.	0.0360	0.3198	0.1144	0.4085

Table 4.26 shows the partial correlation between ICT adoption and cultural taste by taking the effect of all the other variables into account. Partial correlation identifies the relationship between two variables, with the effects of a third variable held constant.

From the above correlation matrix tables, it is evident that a significant positive relationship exists between ICT adoption and culture taste with a p-value<0.05 (r=0.116, p <0.05, p=0.049), when considering correlations between ICT adoption and the five factors above. Further analysis will be done in regression.

4.4.2 Regression Analysis

The regression model for equation 1 was fitted and the results of the overall model are shown as:

Y = 4.24 + 0.13*Culture taste - 0.21*Language +0.12*communication context + 0.10*Cultural values -0.03 Social structure

The model explains the impact of language, cultural taste, communication context, cultural values and social structure on ICT adoption by AU fits on a multiple regression model considers the simultaneous impact.

From the regression model, cultural taste, communication context and culture values impact ICT adoption positively since they have positive coefficients - language and social structure impact ICT adoption negatively. The results from the table indicate that the T-test for individual independent variables shows the factor of the significance of language (p=0.0178) at p-value <.05. This implies that it is only language that has a significant effect on the adoption of ICT. A statistical test must be conducted to determine if the regression model fits (the whole model) and is statistically significant. In this case, the F-test <0.05.

Table 4.27: Analysis of variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	5	21.15906	4.23181	2.0493
Error	282	582.32705	2.06499	Prob> F
C. Total	287	603.48611		0.0720

Table 4.27 shows that the F-ratio is insignificant at p>0.05, p=0.0720. This is an indication that the general effect of communication context, language, social structure, cultural taste, and cultural value was not statistically significant in the model on ICT adoption as shown with F-test at the stated level of significant (p=0.0720, p-value>0.05).

Table 4.28: Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Lower 95%	Upper 95%	Std Beta	VIF
1. Intercept	4.2392112	0.602997	7.03	<.0001*	3.0522654	5.4261571	0	.
2. Cultural taste	0.1348206	0.085328	1.58	0.1152	-0.033141	0.3027821	0.120868	1.7102039
3. Language	-0.209599	0.087941	-2.38	0.0178*	-0.382704	-0.036494	-0.16554	1.4098963
4. Communication context	0.1211922	0.102683	1.18	0.2389	-0.080931	0.3233154	0.086973	1.586988
5. Cultural values	0.0971439	0.092404	1.05	0.2940	-0.084744	0.2790322	0.067069	1.1894162
6. Social structure	-0.029725	0.094594	-0.31	0.7536	-0.215926	0.1564749	-0.0229	1.5515196

From Table 4.28, language has a negative impact significant at p-value ($p<0.05$, $p=0.0178$). Social structure, cultural taste, communication context, and cultural value are not statistically significant at the stated p-value ($p>0.05$).

4.4.3 Fit of the Model

R squared was used to explain model fit and variance that can be clarified by the model. Table 4.29 shows the results of the regression.

Table 4.29: Summary of fit of the model

RSquare	0.035061
RSquare Adj.	0.017953
Root Mean Square Error	1.437007
Mean of Response	4.881944
Observations (or Sum Wgts)	288

From Table 4.29 the adjusted R-square is 0.018, meaning to estimate adoption of ICT by the AU based on culture values, social structure, cultural taste, language and communication context, the model can explain up to 1.8% of the variation in ICT adoption for the sampled data. This shows a very weak fit. The model was estimated using construct scores obtained from the average of the items used as independent variables in this research.

4.4.4 Parameter Estimate for Significant Variables

The model that was fitted with only culture taste and language shows the overall model is now significant ($p=0.0213$) and the results are as shown in Table 4.30.

Table 4.30: Analysis of variance (ANOVA)

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	16.08789	8.04395	3.9028
Error	285	587.39822	2.06105	Prob> F
C. Total	287	603.48611		0.0213*

Table 7: Parameter estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Lower 95%	Upper 95%	Std Beta	VIF
Intercept	4.7759874	0.440164	10.85	<.0001*	3.9096026	5.6423722	0	.
Cultural taste	0.1746772	0.06912	2.53	0.0120*	0.0386267	0.3107276	0.1566	1.1243411
Language	-0.154082	0.078457	-1.96	0.0505	-0.308511	0.0003474	-0.1217	1.1243411

After rerunning the model using estimates from Table 4.31, the new model achieved:

Y = 4.78 + 0.17*Culture taste - 0.15*Language

From the formula above, culture had a positive effect while language harmed the ICT adoption in AU. The effects were all statistically significant at p-value<05.

A T-test was used to assess the significance of individual independent factors. Language was found to be on the borderline with a statistically significant p-value of just above 0.05(p=0.0505), while the cultural taste is significant at a 95% level of confidence whose p-value is 0.0120.

The standardised coefficient of 0.1566 indicates a weak positive impact of cultural taste on ICT adoption, while the standardised coefficient of -0.1217 indicates a negative impact of language on ICT adoption.

Table 4.8: Residuals of the model

RSquare	0.026658
RSquareAdj	0.019828
Root Mean Square Error	1.435634
Mean of Response	4.881944
Observations (or Sum Wgts)	288

The R-square is 0.026658 as per Table 4.17, therefore 2.7% of the variation in ICT adoption is explained by this model, which is a very weak fit.

4.5 Summary of the Chapter

This chapter elaborated on the results and analysis of data. Tables and Figures were mainly used to display the results for the five variables of this study, namely, cultural values, social structure, culture taste, language and communication context. More

specifically, measures of central tendency were useful where data was processed using percentages, means and standard deviations.

The study was carried out among AU staff with 56.6% being male and 42.7% female. A majority (45.83%) were between 36 and 45 years, followed by 24.31% aged between 25 and 35 years, and 21.18% between 46 and 55 years. Staff are drawn from East Africa (56.6%), Southern African region (18.4%), West Africa (14.93%), Central African region (6.6%) and North Africa (3.47%).

From the analysis, most staff (55.21%) agreed that cultural values impact ICT adoption, while 13.54% disagreed and 31.25% were not sure. Organisational cultural values were extremely important with 56.25% of staff agreeing that they have an impact on the adoption of ICT innovation. Approximately 48% of staff disagreed that social culture had any implications on ICT adoption, while 24.31% were uncertain. A majority (64.24%) of staff agreed language influences adoption of ICT, while 21.18% of them disagreed. On whether communication context improves ICT adoption, most participants (76%) said it did, while 9% said it did not have an impact and 15% of the participants were unsure. Finally, from the regression model, cultural taste, communication context and culture values impact ICT adoption positively since they have positive co-efficient, while language and social structure impact ICT adoption negatively.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

The chapter focuses on discussion of the research results from the data gathered. Presentation of results focuses on the study variables. The current chapter will elucidate on these results and present their meaning as results and relate them to the literature. The order of the findings will be as per the research objectives.

5.2 Objective 1: Examining the Impact of Social Structure on Adoption of ICT at the African Union

The results of the social structure research had a median of 5.67 which is close to very important (very important = 6) in the Likert scale. The findings on objective 1 establish that most of the respondents agreed that social structure, on average, enhances the adoption of ICT in the AU but that its effect is moderately important at the AU. This may be attributed to how AU involves staff in decision making such as:

- Giving the staff clearly defined tasks for the projects;
- Having interpersonal relationships between the employees based on the responsibilities;
- Developing hierarchies in decision making; and
- Having clear and stipulated delegation and reporting.

The impact of such acts is also confirmed by Al-Ghaith, Sanzogni and Sandhu (2010), who state that "the social structure adopted in an organisation determines the extent to which the firm can develop and introduce changes which are a part of crucial and regular ICT adaptability."

The findings further compare with those of Di Pietro, Di Virgilio and Pantano (2012) who established that defining clear job requirements as well as having clear reporting channels play a crucial role in promoting a well-supported social structure within an organisation that can enhance changes. Further, by encouraging good relationships among employees based on the duties of specific personnel also serves to ease the implementation of changes in an organisation.

Yasuyuki, Petr and Dagne (2015) observe diffusion of information on a new technology is also dependent on the structure of the social networks. More so, Centola (2010) found that clustering influences adoption of new technology as there is reinforcement from multiple people within the network.

Therefore, if the social culture in AU is acceptable among staff in for example allocation of tasks, reporting lines, hierarchies, interpersonal relationships in departments and various staff categories among others, minimal resistance is expected towards ICT adoption by staff. In the AU, social structure enhances ICT adoption, it provides a background for employees to interact and have their views heard, thus making it easy for them to engage with ICT.

5.3 Objective 2: Assessing the Impact of Communication on Adoption of ICT at the AU

This objective focuses on the importance of communication in ICT adoption. The research revealed that most respondents (76%) agreed that the communication context improved the adoption of ICT, 9% said it does not impact ICT adoption, whereas 15% reported that they were not sure.

The findings further revealed that certain other aspects enhanced ICT adoption at the AU such as:

- Use of common language understood by the employees;
- Communication through gestures;
- Promotion of information sharing; and
- Provision of detailed information on ICT adoption.

The findings concur with the argument by Hofstede (2001) who states that a common cultural communication enhances employees' commitment to the organisation by enabling acceptance to any information infrastructural changes introduced in the organisation by the management. Hofstede (2001) argues that sharing the necessary information with employees and other stakeholders of an organisation is key to making adoption of changes more manageable. Monteiro, Pollock, Hanseth and Williams (2013)

extrapolate this notion that communication is at the centre of all information sharing and relationships in an organisation. They further state that the stakeholders in an organisation should embrace a common language in a bid to have everyone incorporated in any form of communication carried out in the company.

Further, Centola (2010) reiterates on the need for information to flow from multiple sources for the technology diffusion and adoption. Yasuyuki, Petr and Dagne (2015) also note that individuals understand and adopt a technology if the information on a new technology is shared by different people, unlike a situation where there is only one source of information.

Therefore, from the study, communication influences ICT adoption in AU. To further enhance ICT adoption at AU, factors that will heighten communication among employees should be enhanced. For example, ICT tools (both hardware and software) should have a language that all staff understand, and information sharing through multiple channels of communication should be promoted among the staff.

5.4 Objective 3: Determining Impact of Cultural Values on Adoption of ICT at AU

In terms of the role played by cultural values on ICT adoption, the results showed that cultural values were moderately important with a median of five (5) on the Likert scale. Most of the participants agreed that cultural values enhance the adoption of ICT by regarding it as moderately important at the AU.

The results further revealed that organisational cultural values, and cultural values based on groupings and traditionalist cultural affiliations enhance ICT adoption at the AU. According to Deligiannaki and Ali (2011), cultural values strengthen the adoption of innovation in ICT through structured relations among the employees. This is because, through such relations, staff can work as a team to solve challenges that affect them.

The findings further reveal that employees' flexibility in looking for alternative options in different situations such as cultural groupings and traditional cultural affiliation was an important aspect of promoting innovation in ICT. These are groupings that staff may be part of where they are comfortable seeking solution from their peers.

These results compare with the findings by Gigler (2011) who established that seeking information and alternative solutions is worthy of adoption in any organisation that wants to enhance its employees' commitment to informational capabilities. Going by the route of finding solutions by considering issues, employees ensure that they create awareness amongst themselves through culturally based groupings that also ensure they share common values towards achieving the key goal of the firm to adopt an infrastructural change (ICT) to promote performance.

Therefore, cultural values influence ICT adoption at the AU and the management should be for example, cognizant of the cultural groupings that exist in the institution and utilise them for technology adoption. Staff who may have technology challenges are likely to lean towards those in their group for help, and this will, in the end, fast track technology adoption.

5.5 Objective 4: Determining Impact of Language on Adoption of ICT at AU

The study focused on bringing out the role played by language on ICT adoption at the AU. Language had a median of 5.2, which was moderately vital as per the Likert scale. The result concurs with the findings by Al-Jabri and Sohail (2012) that as much as technological adoption in an organisation is essential, its full adoption is a nightmare if improper language is used. Language influences ICT adoption as it creates awareness of the said technology. Further, Wamala (2010: 141) observes “technology wrapped in the local languages increases familiarity…”

According to Taksa and Flomenbaum (2009) creating a diverse culture in an organisation calls for a significant induction of the language that seeks to enhance the understanding of whatever that is being shared in an organisation. More so, Warschauer (2004) emphasises that language and content is crucial for people to access and use new technologies. It is understandable, therefore, that organisations that use multiple languages should improve the communication and information sharing that is so essential for transformation of information infrastructure. Interpersonal language barriers affected ICT adoption, while the use of different languages influenced interpretations.

To enhance ICT adoption at the AU, there is the need to accommodate different languages within ICT programmes given that staff members are drawn from diverse

nations. It is evident that users' confidence to try out a new technology is enhanced if they identify with and understand the language used.

5.6 Objective 5: To Determine the Impact of Cultural Taste on Adoption of ICT at the AU

The study aimed to establish the role played by cultural taste on ICT infrastructural changes at the AU. Cultural taste median of 5.5 is moderately important on the Likert scale. Therefore, the research established that most of the participants agreed that, on average, cultural tastes enhance the transformation of ICT at the AU.

Further, the findings reveal that the key measures enhancing changes to ICT infrastructure in the AU are through employees who focus on meeting targets, on their loyalty to the AU, and who further the needs of the AU to succeed, as well as participate in the social network. These findings compare with those of Gerhart (2008) who established that national cultural taste plays a vital role in enhancing the employees' participation in organisational activities, which in turn enhances the achievement of the set goals.

Change management in ICT calls for stakeholders' commitment, mainly employees who are the main users of the technology. Cultural taste of employees and other stakeholders helps in acceptance and embracing of a new technology. Data analysis from the final model further revealed that cultural taste was statistically significant with a p-value of less than 0.05 ($p=0.012$) and a standardised coefficient which is very low ($\beta=-0.1217$), indicating a weak negative impact of cultural taste on ICT adoption. Therefore, the standard coefficient shows that there is an adverse effect on ICT adoption.

Therefore, the AU should strive to ensure their employees understand the importance of embracing technology. More so, the effect this has towards individual and collective activities such as meeting targets, loyalty, need for AU success, participation in social networks, and embracing national culture.

5.7 Summary of the Chapter

This chapter discusses the research findings of the five objectives of this study which

include: Assessing the importance and effects of social structure on adoption of ICT at AU; Assessing the importance of communication and its impact on adoption of ICT at AU; Assessing the importance of cultural and its influence on adoption of ICT at AU; Determining importance of language and its effect on adoption of ICT at AU; and Finding the importance of cultural taste and its impact on adoption of ICT at AC.

This research finds that if the social culture in AU is acceptable among staff, minimal resistance is expected towards ICT adoption. In the AU, social structure provides a background for employees to interact and have their views heard, thus making it easy for them to engage with ICT. The AU should be cognizant of the cultural groupings in the institutions and utilise them, as staff with technology challenges are likely to seek help from members of their group, fast tracking technology adoption. Users of a technology exhibit confidence in using it if they understand the language. Therefore, ICT programmes should strive to be in different languages to accommodate AU staff drawn from diverse nations. Finally, the AU should strive towards ensuring staff understand the importance of embracing technology and its role towards individual and collective cultural activities. By having this understanding, staff may identify with the need for adopting various technologies, as the benefits are clear to them.

CHAPTER SIX

CONCLUSIONS, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

6.1 Introduction

The section outlines recommendations from research as per the research questions. This chapter highlights a summary of the research finds, the recommendations, areas of further research and study limitations. The study aims to establish the best conditions for ICT adoption in a multicultural context such as the African Union.

6.2 Conclusions

The research focused on exploring ICT transformation in a culturally based milieu. It employed both descriptive analysis, and inferential and regression analysis which had different results. Descriptive analysis found a correlation between cultural taste, language, communication context, cultural values and social structure and ICT adoption, while inferential analysis found only cultural taste had influence on ICT adoption, and regression analysis found cultural taste, communication context and culture values had influence on ICT adoption.

However, the conclusions of this study are as follows: firstly, social structure is vital in promoting the adoption of ICT in the AU. Most participants felt social structure had a positive effect on ICT transformation in the organisation. The entire variable that measured social structure in the research tool was extracted in component 1 and had a positive correlation with ICT adoption.

Further findings from the research led to the conclusion that the provision of clear and well-defined tasks as well as the encouragement of interpersonal relationships among AU employees promotes positive change management in terms of ICT infrastructural planning. Callon (2006) states that the sociological structure should define management awareness about employees before introducing specific planned changes to a system of the organisation to curb the menace of resistance among employees. Knowledgeable employees are always ready to support a procedure and a system in which they were involved, and their views noted and well considered. The findings from this research are

explicit by showing how much the participants agree that staff involvement is essential in promoting ICT adoption at the AU.

According to AU staff, therefore, this research concludes that despite the merits of the integration of social culture as a critical motivator for change, the AU has not yet fully embraced the inductive social culture. Hence, it should adopt the induction of all cultures to ensure a good social and organisational culture. This organisational culture pertains to the involvement of all the staff in management decisions to ensure that they are aware of the intended changes. Staff involvement will enhance the relationships between different departments and employees within the structure of the organisation during ICT transformation in the AU.

The research also concludes that communication is an essential aspect for changes to ICT infrastructure in an organisation. Use of a common language is essential for promoting communication; thus, the conclusion that the AU embraces specific languages for all the staff to make official communication is understandable. When communication is made in a language that is not understood by all members of an organisation, it makes some of them feel excluded and therefore, may lead to lack of support for any proposal. These results confirm what Peres, Muller and Mahajan (2010) found that communication is sharing of information between two parties that needs to ensure a clear understanding of the matters at hand. In this case, if one of the parties is in a geographical location that does not adequately convey clear information, it will therefore, affect the reliability of the data thus affecting the entire process. In terms of the AU, this will in turn, not yield the necessary communication of ICT change management. While the results show that communication in the AU had a positive effect on ICT adoption, this means that proper channels should be defined during communication for the most significant impact. The research concludes, therefore, that the AU should promote communication by adoption of multiple strategies such as gestures to enhance understanding and to facilitate its hearing-impaired employees.

Further, other factors play a role in enhancing the change adoption strategies at the AU: first, the establishment of groups based on cultural values, and second having a structure that accommodates traditional culture affiliations indicating that cultural values influence ICT adoption at the AU. This concurs with the findings by Hanseth and Monteiro (1997) who establish that the cultural behaviours inscribed by the employees in an organisation

guarantee the best rate for enhancing information infrastructure changes. According to the literature, this is made possible due to the different mind-set of employees who get issues solved and thus even with the introduction of new changes; they can easily overcome any obstacle that they may encounter because of the changes.

On the impact of language on ICT transformation, the research concludes that language is a critical source of effective communication. For employees to understand the intended change that a certain technology is to bring, the language used should be well understood and known to the employees. The research concludes that the AU has embraced the right language to communicate the intended changes, although they have not achieved it effectively according to the participants who believe that they lack the application of their different languages on the technological platforms and the use of clear languages in the processes and systems adopted. Such findings need extrapolation to the management so that they consider the languages used by all the stakeholders to enhance better communication. According to Zhao (2011), employees require a language that they know when new processes and systems are introduced to them. For the language to work better, there must be an induction into the requirements of the policies that will improve their performance.

The research concludes that although cultural taste is essential in enhancing adoption of ICT at the AU, the aspect is not fully embraced in the organisation. According to Doherty and Perry (2001), improving cultural taste promotes loyalty and conjoined performance in the organisation. To meet the set targets for change in the ICT of an organisation, there is a need for management to ensure that the cultural taste within the firm is extrapolated to the employees so that they are supportive and ready to adopt the changes to meet the set targets.

The research results establish that only cultural taste had a significant effect on ICT adoption at a p-value<0.05 with a positive impact on ICT adoption. Language had a statistical insignificant p> 0.05 (p=0.505) with a negative impact. These two factors resulted in a new model Y = 4.78 + 0.17*Culture taste - 0.15*Language. Therefore, in conclusion, cultural taste and language are the two key factors that influence ICT adoption in AU.

6.3 Recommendations

Firstly, the research recommends that the AU should embrace social culture to enhance ICT change and other changes. Management should ensure that there are interpersonal relations among the employees that create an enabling environment for the personnel to integrate and develop problem-solving strategies among themselves. The organisational management should ensure that they have well-structured and clear job requirements which incorporate all the employees' capabilities. This will enhance employees' awareness on the roles that they may be required to play on the introduced changes.

Secondly, the research recommends that the management of AU should reliably communicate the required information to the staff members on any planned changes in the organisation, by incorporating an integrated communication system. These can be different types of communication that seek to ensure that information is understood by all the members of staff in the Commission such as use of gestures and different languages in the system.

The third recommendation is that the AU should ensure cultural values embraced in the organisation are supportive of ICT changes intended to enable the Commission to perform better. The research recommends that the AU management establishes key strategies meant to encourage the diverse employees to be aware of alternative solutions to any challenge that occurs from other sources inside and outside the firm. This would enable employees to accept any change proposals in the organisation provided they are free to consult and seek any information regarding the changes.

Fourth, the research further recommends that language and cultural taste should be keenly worked on by the organisation and other stakeholders since the two have significant effect on ICT adoption by AU at $p\text{-value}<0.05$. This study, therefore, recommends that the AU, through its management, embraces the adoption of languages that the entire team of staff understands, especially when imparting information regarding changes in the organisation. In this regard, the AU should embrace the adoption of information technology to make different and diverse languages inclusive in the ICT systems for ease of use among the employees.

6.4 Areas for Further Research

This study focused on the AU, though it is not the only organisation with diverse cultures in Africa. Thus, there is a need for similar research to focus on other international public organisations to establish the effects of the cultures on ICT transformation.

While this research found that only two variables (language and cultural taste) fitted the predictive model, there is a need for detailed analysis to be undertaken for these two variables.

The research further found out that the predicted model with all five variables could only explain up to 1.8% of the variation best on the model that was fitted. This is too low; hence more research should be undertaken using different methodologies to assess and compare different results based on the model derived.

Further, the final research model ended up with culture taste and language as the two key factors that impact ICT adoption in AU. There is need for future studies to investigate further relationships between the two elements.

6.5 Limitations

The research tool was shared through the internet, due to the nature of AU, where communication among staff is majorly through official email. While the questionnaire was validated, the results were limited by the number of responses, because some respondents were not able to complete the questionnaire, and therefore did not participate in the research as anticipated.

In particular, the response rate of participants from regional offices located outside of Ethiopia was found wanting. This was attributed to geographical and time zone constraints. While the researcher made a deliberate effort to reach out to these participants via email reminders and phone calls, the follow-up resulted in only some participants heeding the call.

The researcher also had a challenge in the timing of some participants to respond to the questionnaires due to their busy working schedules. Therefore, the researcher made

special arrangements to meet some of these participants outside office hours. Some of the responses obtained were not correct because of the inconsistency of some participants' responses while filling the questionnaires; an indication that some of the participants were not cooperative.

Lastly, the study found a contradiction between the descriptive analysis, and inferential and regression analysis. While descriptive analysis found a correlation between cultural taste, language, communication context, cultural values and social structure and ICT adoption, inferential analysis found only cultural taste had influence on ICT adoption, and regression analysis found cultural taste, communication context and culture values had influence on ICT adoption. Further, since ICT adoption was not measured as a separate variable/construct, in some instances there were some subjective questions.

REFERENCES

Aaker, A., Kumar, V.D., & George, S. 2000. *Marketing research*. New York: John Wiley & Sons Inc.

Abrahams, L., & Goldstuck, A. 2010. The state of e-development in South Africa: A view from the end of the first decade of the 21st century. *Public Policy Research Paper No. 11*.

African Union. 2018. African Union corporate website. Accessed on 12 September 2018. https://au.int.

Al Jenaibi, B.N.A. 2011. The scope and impact of workplace diversity in the United Arab Emirates – An initial study. *Journal for Communication and Culture.* 1 (2): 49-81.

Albirini, A. A. 2006. Teacher's attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Journal of Computers and Education*. 47, 373-398.

Al-Ghaith, W., Sanzogni, L., & Sandhu, K. 2010. Factors influencing the adoption and usage of online services in Saudi Arabia. *The Electronic Journal of Information Systems in Developing Countries*. 40, 1: 1-32.

Al-Jabri, I. M., & Sohail, M. S. 2012. Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research*. Vol. 13, No. 4, 379-391.

Amadeo, K. 2020. Cultural Diversity in the Work Place. Retrieved from http://useconomy.about.com/od/suppl1/g/Cultural-Diversity.htm. Accessed on 09 April 2020.

Association of African Universities. 2018. Association of African Universities website. Accessed on 12 September 2018. https://www.aau.org./ Accessed on 12 September 2018.

Azam, S., & Quaddus, M. 2013. Examining the influence of national culture on adoption and use of information and communication technology: A study from Bangladesh's SME perspective. *The International Technology Management Review.* Vol. 3, No. 2: 116-.

Babatunde, M. A. 2011. Keeping the lights on in Nigeria: Is power sector reform sufficient? *Journal of African Business.* 12: 3: 368-386.

Babbie, E. 2002. *The basics of social research*. Belmont. CA: Wadsworth Group.

Barba-Sánchez, V., Martínez-Ruiz, M.P., & Jiménez-Zarco, A. I. 2007. Drivers, benefits and challenges of ICT adoption by small and medium sized enterprises (SMEs): A literature review. *Problems and Perspectives in Management.* Vol. 5, Issue 1: 103-114.

Beugelsdijk, S., van Schaik, T., & Arts, W. 2006. Toward a unified Europe? Explaining differences in value patterns by economic development, cultural heritage and historical shocks. *Regional Studies*. 40(3): 317-327.

Botha, N., & Atkins, K. 2005. An assessment of five different theoretical frameworks to study the uptake of innovations. *Paper presented at the 2005 NZARES Conference Tahuna Conference Centre.* August 26-27. Nelson, New Zealand.

Buchanan, E.A., & Hvizdak, E.E. 2009. Online survey tools: Ethical and methodological concerns of human research ethics committees. *Journal of Empirical Research on Human Research Ethics*. 4(2): 37-48.

Callon, M. 2006. *What does it mean to say that economics is performative?* Working Paper, Ecole des Mines, Paris.

Cameron, K.S., & Quinn, R.E. 2006. *Diagnosing and changing organisational culture: Based on the competing values framework*. Beijing: China Renmin University Press.

Cameron, K.S., & Quinn, R.E. 2011. Diagnosing and changing organisational culture: Based on the competing values framework. 3rd Ed. San Francisco: Jossey-Bass.

Canton, E.J.F., de Groot, H.L.F., & Nahuis, R. 2002. Vested interests, population ageing and technology adoption. *European Journal of Political Economy*. Vol. 18, No. 4: 631-652.

Capaldo, C., Flanagan, K., & Littrell, D. 2008. *Teacher interview 7377–Introduction to technology in schools.* Available on http://philaliteracy.org/wp-content/uploads/2014/05/2013-What-are-the-different-types-of-technology-you-use-in-your-classroom.pdf. Accessed on 23 October 2017.

Casey, T., & Wilson-Evered, E. 2012. Predicting uptake of technology innovations in online family dispute resolution services: An application and extension of the UTAUT. *Computers in Human Behavior*. 28(6): 2034-2045.

Centola, D. 2010. The spread of behavior in an online social network experiment. *Science* 329: 1194-97.

Cheung, C. M. K., Chan, G. W. W., & Limayem, M. 2005. A critical review of online consumer behavior: Empirical research. *Journal of Electronic Commerce in Organizations*. 3(4): 1-19.

Combi, M. 2016. Cultures and technology: An analysis of some of the changes in progress—digital, global and local culture. In *Cultural Heritage in a Changing World.* Borowiecki K., Forbes N., Fresa A, Eds. Springer, Cham.

Cooper, D.R., & Schindler, P.S. 2003. *Business research methods.* 8th Ed. McGraw-Hill Irwin: Boston.

Cronbach, L. J. 1951. Coefficient Alpha and the internal structure of tests. *Psychometrika*. 16: 297–334. https://doi.org/10.1007/BF02310555.

Davis, F., Bagozzi, R., & Warshaw, P. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science*. 35: 982-1003. 10.1287/mnsc.35.8.982.

Deligiannaki, A., & Ali, M. 2011. Conference proceedings of the European, Mediterranean & Middle Eastern Conference on information systems, cross-cultural impact on diffusion and adoption of innovation: An exploratory case research to investigate the social-cultural barrier. 30-31 May. Athens, Greece.

Dibaba, W., & Babu, R. 2017. The role of effective integration of ICT in education, especially in primary and secondary education of remote settings. *International Journal of Advanced Research in Computer Science*. Vol. 8, No. 9: 10. November-December. Wollega University Nekemte.

Di Pietro, L., Di Virgilio, F. & Pantano, E. 2012. Social network for the choice of tourist destination: Attitude and behavioural intention. *Journal of Hospitality and Tourism Technology*. 3(1): 60-76.

Doğan, R. 2010. Honour killings in Turkey: Culture subjectivism and provocation. Unpublished Doctoral Thesis. Keele University, UK.

Doherty, N. F., & Perry, I. 2001. The cultural impact of workflow management systems in the financial services sector. *The Services Industry Journal*. 21(4): 147-166.

Du, H., Whinston, A.B., Lu, T., & Liu, J. 2010. An empirical study of consumer adoption on mobile data services (MDS) in China. *Second International Conference on Multimedia and Information Technology*. 298-301.

Edquist, C., Hommen, L., & McKelvey, M. 2001. Innovation and employment: Process versus product innovation. UK: Edward Elgar Publishing, Cheltenham.

Erumban, A., & De Jong, S.B. 2006. Cross-country differences in ICT adoption: A consequence of culture? *Journal of World Business*. Vol. 41, No. 4: 302-314.

Erwin, G.J., & Taylor, W.J. 2004. Social appropriation of internet technology: A South African platform. *The Journal of Community Informatics.* 1(1): 21-29.

Eseonu, C., & Egbue, O. 2014. Socio-cultural influences on technology adoption and sustainable development. *IIE Annual Conference and Expo*. 2711-2716.

Ferreira, A. 2010. Creative communities and development, journey - Business creativity as a path to creativity. *CRIA Entrepreneurship and Technology Transfer Division of the University of Algarve*. 20 April.

Fox, W., & Bayat, M.S. 2007. *A guide to managing research*. Juta Publications. 45.

Gallivan, M., & Srite, M. 2005. Information technology and culture: Identifying fragmentary and holistic perspectives of culture. *Information and Organisation*. 15(2): 295-338.

Geertz, C. 1973. *The interpretation of cultures.* New York: Basic Books.

Gerhart, B. 2008. How much does national culture constrain organizational culture? *Management and Organization Review*. 5, 241–259.

Gigler, B. 2011. Informational capabilities - The missing link for the impact of ICT on development. *E-transform knowledge platform Working Paper*. The World Bank, Working Paper Series No. 1. 1-19. Groupware and Teamwork.

Gilfillan, S.C. 1935. *Inventing the ship*. Chicago: Forllet Pub. Co.

Greenhalgh, T., Howick, J., & Maskrey, N. 2014. *Evidence based medicine: A movement in crisis?* BMJ 348: 3725. Doi: 10.1136/bmj.g3725.

Gupta, S., & Zeithaml, V. 2008. Customer metrics and their impact on financial models: A critical review and research directions. *International Journal of Research in Marketing.* 27 (2): 91–106.

Hanseth, O., & Monteiro, E. 1997. Inscribing behaviour in information infrastructure standards. account. *Manager Information Technology.* 7: 183–211.

Herbig, P., & Dunphy, S. 1998. Culture and innovation. *Cross cultural management.* Vol. 5, No.4:13-21.

Hofstede, G. 2001. *Culture's consequences – Comparing values, behaviours, institutions and organizations across nations*. London: Sage Publications.

Hofstede, G. 1980. *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.

Hofstede, G. 1997. *Cultures and organizations: Software of the mind.* London: McGraw-Hill.

Hofstede, G., & Hofstede, G. J. 2001. *Culture's consequences*. 2nd Ed. London, UK: Sage Books.

Hofstede, G., Hofstede, G., & Minkov, M. 2010. *Cultures and organizations: Software of the mind*. 3rd Ed. McGraw-Hill.

Hyard, A. (2013). Non-technological innovations for sustainable transport. *Technological Forecasting & Social Change.* 80:1375-86.

International Cooperative Alliance – ICA. 2005. International Cooperative Alliance statement of the co-operative identity, values & principles. http://old.ica.coop/en/whats-co-op/co-operative-identity-values-principles

Kaiser, H.F. 1960. The application of electronic computers to factor analysis. *Educational and Psychological Measurement*. 20: 141-151.

Kapur, R. 2018. *Significance of digital technology*. Available on https://www.researchgate.net/publication/323829721. Assessed on 22 October, 2017

Karahanna, E., Evaristo, J.R., & Srite, M. 2005. Levels of culture and individual behaviour: An integrative perspective. *Journal of Global Information Management.* 13(2):1-20.

Kim, H., Chan, H. C., & Gupta, S. 2007. Value-based adoption of mobile internet: an empirical investigation. *Decision Support Systems*. Vol. 43: 111-126.

Kitheka, K. T. 2011. The perception and extent of using of information, communication and technology in micro, small and medium enterprises in Hurlingham Nairobi. Unpublished master of business administration thesis. Daystar University. Nairobi.

Kothari, C. R. 2004. Research methodology: Methods and techniques. 2nd Ed. New Delhi: New Age International Limited.

Latour, B. 2001. Technology is society made durable. *A Sociology of Monsters: Essays on Power, Technology and Domination*. 103 – 130. London: Routledge.

Lauret, A. 1983. The cultural diversity of western conceptions of management. *International Studies of Management and Organization.* 13: 75-96.

Leidner, D. E., & Kayworth, T. 2006. A review of culture in information systems research: Toward a theory of information technology culture conflict. *MIS Quarterly.* 30(2): 357–399.

Lin, T.C., Wu, S., Hsu, J.S.C., & Chou, Y.C. 2012. The integration of value-based adoption and expectation–confirmation models: An example of IPTV continuance intention. *Decision Support Systems*. 54(1): 63–75.

Linderoth, H.C.J. 2007. Make technology invisible, or keep it visible?" In *Organizational Dynamics of Technology-Based Innovation: Diversifying the Research Agenda,* Eds. McMaster T., Wastell D., Ferneley E., & DeGross J.I. IFIP International Federation for Information Processing. Vol. 235. Springer, Boston, MA.

Lucas, H.C. 1975. *Why information systems fail*. New York: Columbia University Press.

MacVaugh, J., & Schiavone, F. 2010. Limits to the diffusion of innovation: A literature review and integrative model. *European Journal of Innovation Management.* 13: 197-221.

Markus, M. L., & Robey, D. 2008. Information technology and organisational change: Causal structure in theory and research. *Management Science*. 34(5): 583 - 598.

Martin, G. C. (2014). The effects of cultural diversity in the workplace. *Journal of Diversity Management* (JDM). 9(2): 89-92.

Masoud, M., Petter, N. & Honest, K. 2019. The social and technical conditions enabling innovations in information infrastructures: A case study from public health in Tanzania. *African Journal of Science, Technology, Innovation and Development*. 11 (7): 795-805. DOI: 10.1080/20421338.2019.1594557.

Merchant, S. 2007. Exploring the influence of cultural values on the acceptance of information technology: An application of the technology acceptance model. *Issues in Informing Science and Information Technology*. Vol. 4: 431-443.

Meso, P., Musa, P., & Mbarika, V. 2005. Towards a model of consumer use of mobile information and communication technology in LDCs: The case of Sub-Saharan Africa. *Information Systems Journal*. 15 (1): 119-146.

Mian, Z., Hai, L., & Jun, W. 2008. Examining the relationship between organizational culture and performance: The perspectives of consistency and balance. Higher Education Press and Springer-Verlag.

Monteiro, E., Pollock, N., Hanseth, O., & Williams, R. 2013. From artefacts to infrastructures. *Computer Supported Cooperative Work.* 22(4-6): 575-607.

Mugenda, O., & Mugenda, A. (2003). Research methods: Quantitative and qualitative approaches. Nairobi: Acts Press.

Muriithi, P., Horner, D. & Pemberton, L. 2016. Factors contributing to adoption and use of information and communication technologies within research collaborations in Kenya. *Information Technology for Development.* 22: 84-100.

Myers, M. & Tan, F. 2002. Beyond models of national culture in information systems research. *Journal of Global Information Management*. 10(2): 1-19.

Nunnally, J.C. 1978. Psychometric theory. 2nd Ed. New York: McGraw-Hill.

Oates, B. 2006. *Researching information systems and computing*. London: Sage Publications.

Orodho, M.B., & Kombo, D.K. 2003. *Proposal and thesis writing*. Nairobi: Pauline Paris.

Ouchi, W.G. 1979. A conceptual framework for the design of organizational control mechanisms. *Management Science*. 25, 833–848.

Pederson, P., & Ling, R. 2002. Modifying adoption research for mobile internet service adoption: Cross-disciplinary interactions. *Proceedings of the 36th Hawaii International Conference on System Sciences*. Big Island, HI.

Peres, M., Muller, E., & Mahajan, V. 2010. Innovation diffusion and new product growth performance. *Marketing Science.* 25 (6): 718-739.

Pesole, A. 2015. How much does ICT contribute to innovation output? An analysis of the ICT component in the innovation output indicator. JRC-IPTS Working Papers JRC94372. Institute for Prospective and Technological Studies. Joint Research Centre (Seville site).

Pesole, A., & Nepelski, D. 2016. Universities and collaborative innovation in EC-funded research projects: An analysis based on innovation radar data. JRC Working Papers JRC104870. Joint Research Centre (Seville site).

Petronilla, M., David, H., & Lyn, P. 2016. Factors contributing to adoption and use of information and communication technologies within research collaborations in Kenya. *Information Technology for Development.* 22, sup. 1: 84-100. DOI: 10.1080/02681102.2015.1121856

PricewaterhouseCoopers-PwC. 2012. African Union Commission's Systems Applications and Products (SAP): Post implementation review report. Addis Ababa.

Quinn, R., & Rohrbaugh, J. 1983. A spatial model of effectiveness criteria: Toward a competing values approach to organizational analysis. *Management Science*. 29: 363-377.

Ravindra, J. (2020). Employee innovative behavior: A conceptual framework. *Indian Journal of Industrial Relations*. Vol. 51, No. 1: 1-16. Gale Academic OneFile.

Regi, S.B., & Golden, S.A.R. 2014. Attitude of rural people towards technology inclusion in banking services at Tirunelveli District. *IGJAE–Indo Global Journal of Applied Management Science*. 2 (2).

Renda, A. 2016. *Selecting and designing European ICT innovation policies*. Joint Research Centre Science for Policy Report. EUR 28205 EN. Doi:10.2791/077076.

Rogers, E.M. 2003. *Diffusion of innovations.* 5th Ed. New York: Free Press.

Rogers, M. 2012. Contextualizing theories and practices of Bricolage research. *The Qualitative Report.* 17(48): 1-17.

Roostika, R. 2012. Mobile internet acceptance among university students: A value-based adoption model. *International Journal of Research in Management & Technology* (IJRMT). 2 (1), 21-28.

Rosenberg, N. 1996. Uncertainty and technological change. In *The Mosaic of Economic Growth.* Landau, R. and Taylor, G. W., Eds. Stanford, CA: Stanford University Press.

Sarosa, S. 2007. *The information technology adoption process within Indonesian small and medium enterprises*. Doctoral Thesis. University of Technology Sydney, Australia.

Saunders, M., Lewis, P., & Thornhill, A. 2009. *Research methods for business student. 5th Ed.* Edinburgh Gate: Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. 2007. *Research methods for business students. 4th Ed*. Edinburgh Gate, Harlow: Financial Times Prentice Hall.

Schepers, J., & Wetzels, M. 2007. A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information and Management*. Vol. 44: 90-103.

Schneider, S.C., & Barsoux, J. L. 2003. Managing across cultures. 2nd Ed. Pearson Prentice Hall, USA.

Seyd, A. & Mohammad, N. 2009. ICT adoption in small and medium enterprises: An empirical evidence of service sectors in Malaysia. *International Journal of Business and Management*. 4. 10.5539/ijbm.v4n2p112.

Shachaf, P. 2008. Cultural diversity and information and communication technology impacts on global virtual teams: An exploratory study. *Information and Management*. 45 (2): 131 - 142.

Singh, S. 2010. The South African 'information society', 1994–2008: Problems with policy, legislation, rhetoric and implementation. *Journal of Southern African Studies*. 36 (1): 209 – 227.

Sjöström, J. 2010. *Designing information system-a pragmatic approach*. Doctoral Dissertation. Uppsala University, Sweden.

Srite, M., & Karahana, E. 2006. The influence of national culture on the acceptance of information technologies: An empirical study. *MIS Quarterly.* 30: 679-704.

Taksa, I., & Flomenbaum, J. 2009. An integrated framework for research on cross-cultural information retrieval. *6th International Conference on Information Technology*: *New Generations*. 1367-1372. 10.1109/ITNG.2009.99.

Thomas, J.C., & Streib, G. 2003. The new face of government: Citizen-initiated contacts in the era of e-government. *Journal of Public Administration Research and Theory*. Vol. 13, No.1: 83 – 102.

Thong, J.Y.L., & Yap, C.S. 1995. CEO characteristics, organizational characteristics and information technology adoption in small businesses. *Omega*. 23(4): 429-442.

Tolba, A.H., & Mourad, M. 2013. Individual and cultural factors affecting diffusion of innovation. *Journal of International Business and Cultural Studies*. Retrieved from: http://www.aabri.com/manuscripts/11806.pdf

Trefry, M.G. 2006. A double-edged sword organizational culture in multicultural organizations. *International Journal of Management.* 23: 563-575.

Trompenaars, A., & Hampden-Turner, C. 1998. Riding the waves of culture: Understanding cultural diversity in global business. New York: McGraw Hill.

Tung, R. 1995. International organizational behaviour. *Luthans Virtual OB*. McGraw-Hill. 487-518.

UNESCO. 2009. *UNESCO world report: Diversity and intercultural dialogue.*

Vaara, E. 2002. On the discursive construction of success/failure in narratives of post-merger integration. *Organization Studies*. 23: 213–50.

Van Raaij, E.M., & Schepers, J.J. 2008. The acceptance and use of a virtual learning environment in China. *Computers & Education*. 50(3): 838-852.

Van Zyl, I. 2013. *Technology encounters and the symbolic narrative: Localising the 'technology for development' experience in South African education settings.* PhD Dissertation. Faculty of Communication Sciences, Università della Svizzera italiana.

Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly.* 27: 425-478.

Walsham, G. 2002. Making a world of difference: IT in a global context. New York, NY: Wiley.

Wamala, C. 2010. *Does IT count? complexities between access to and use of information technologies among Uganda's farmers*. Lulea: Universitetstryckeriet

Warschauer, M. 2004. *Technology and social inclusion: Rethinking the digital divide.* MIT Press.

Williams, M., Rana, N., & Dwivedi, Y. 2015. The Unified Theory of Acceptance and Use of Technology (UTAUT): A literature review. *Journal of Enterprise Information Management.* 443-488.

Wintjes, R. 2016. Systems and modes of ICT innovation. Joint Research Centre Science for Policy Report. EUR28005EN. Doi: 10.2791/58656

Yasuyuki, T., Petr, M., & Dagne, M. 2015. Effects of social network structure on the diffusion and adoption of agricultural technology: Evidence from rural Ethiopia. Working Papers 1505. Waseda University.

Zeithaml, V.A. 1988. Consumer perceptions of price, quality and value: A means-end model and synthesis of evidence. *Journal of Marketing.* 52 (3).

Zhao, F. 2011. Impact of national culture on e-government development: A global research. *Internet Research*. 21(3). 362—380.

Ziemba, E. 2016. Factors affecting the adoption and usage of ICTs within Polish households. *Interdisciplinary Journal of Information, Knowledge, and Management*. 11: 89-113. Retrieved from http://www.informingscience.org/Publications/3507.