



**THE INFLUENCE OF INDIGENOUS AFRICAN CULTURE ON SME ADOPTION
OF DIGITAL GOVERNMENT SERVICES IN ZAMBIA**

by

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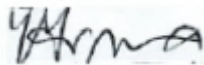
Exact wording of the title of the thesis as appearing on the copies submitted for examination:

**THE INFLUENCE OF INDIGENOUS AFRICAN CULTURE AND INTERNET ACCESS ON
SME ADOPTION OF DIGITAL GOVERNMENT SERVICES: E-FILING AND E-PAYMENT
SERVICES IN ZAMBIA**

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Abstract

Many low-income countries desire to implement and adopt digital government as a springboard for economic and social development but face many challenges. The United Nations identifies that Africa has especially lagged consistently in digital government development and adoption. Most scholars largely attribute the challenges to infrastructure and skills, and often rhetorically cite *culture* as playing a strong role. This study specifically examined the role of indigenous African culture (*'spirituality'*, *'communalism'* and *'respect for authority and elders'*) and internet access on the adoption of digital government services (e-filing and e-payment of taxes) by Small and Micro Enterprises (SMEs) in Zambia, with the Unified Theory of Acceptance and Use of Technologies (UTAUT) as the underpinning theoretical lens. Data analysis was done using Structural Equation Modelling with principal attention given to the moderating and mediating influence of indigenous African culture. The influence of internet access on the intention to adopt digital government was also examined. The findings from the cross sectional study of 401 tax registered SMEs suggests that *'spirituality'*, *'African communalism'* and *'respect for authority and elders'* have significant negative *moderating* effects on the adoption of e-filing but not on e-payment; and *'spirituality'*, *'African communalism'* and *'respect for authority and elders'* are all significant *mediators* of the intention to adopt both e-filing and e-payment. This means that indigenous African culture plays a significant role in explaining Africa's position in digital government development and adoption. The findings also showed a negative influence of internet access on the intention to adopt digital government services despite the measures that government has put in place. These results make a novel contribution to Information Systems (IS) theory in identifying a critical yet often overlooked indigenous cultural influence on the adoption of digital innovations in low-income countries. The findings also calls for finding new or adapted IS theories that take into account such unique cultural constructs. The thesis recommends that the research is extended to other low-income countries as well as other contexts that exhibit strong indigenous cultural values.

Keywords

Digital government, African culture, indigenous culture, spirituality, communalism, respect, internet access, e-filing, e-payment.

Key terms

Digital government; indigenous African Culture; Spirituality; African Communalism; Respect; Internet Access; Unified Theory of Acceptance and Use of Technologies (UTAUT); digital government maturity models; Structural Equations Modelling (SEM), Electronic filing; Electronic Payments.

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CHAPTER 1

1. INTRODUCTION AND THESIS OVERVIEW

1.1 Introduction and Background

Many low-income countries are implementing digital government systems aimed at improving services offered by government (Samboma, 2019). Digital government systems are designed and implemented to overcome bottlenecks to achieve a digital service delivery system that is efficient and contributes to the development of a country (Khamis and VanderWeide, 2017). The adoption however, has had consistent challenges, especially in low-income countries (UNDESA, 2018).

The Department of Economic and Social Affairs of the United Nations, in their survey of 2018, showed that low-income countries of Africa and Oceania have the lowest index for digital government development (UNDESA, 2018). High income regions of Europe have the highest Electronic Government Development Index (EGDI). EGDI reflects level of digital government adoption in a given region in comparative terms. Africa has consistently lagged behind both in implementation as well as digital government adoption (Weerakkody *et al.*, 2007; Kupe and Okello, 2012; UNDESA, 2016, 2018).

Considerable research has been undertaken with the objective of understanding the factors influencing the acceptance of digital government (Alok and Deepti, 2012; Azmi, Kamarulzaman and Hamid, 2012b; Chandra, 2015; Gupta, Syed, *et al.*, 2015; Gupta, Udo, *et al.*, 2015; Mustapha, Normala and Sheikh, 2015; Syed, Henderson and Gupta, 2017). The findings largely point to political, financial, technological, social and to a lesser extent cultural factors (Kupe and Okello, 2012; Choudrie *et al.*, 2017). While political, financial and technological factors are universal and have the same nature of impact regardless of region or location, culture, on the other hand, is context specific. The moderating and mediating influence of culture, especially indigenous culture, is different from region to region depending on the extent to which it is embedded in communities and individuals. The argument in this thesis is that the embodiment of culture in its indigenous form in communities and individuals in Africa is different compared to other regions (Táiwò, 2016) and hence the need to investigate its influence on digital government adoption. The study also sought to bring to the fore the impact of internet access on digital government adoption, particularly in Zambia, following the reduction of the telecommunication tariffs by mobile

service operators and the government efforts to implement telecommunication towers to enable the achievement of sustainable development goal (SDG) Target 9. The SDG recommends for the provision of universal and affordable internet access in low-income countries by 2020 (UN-OHRLLS, 2018).

1.2 SMEs in Zambia and e-Filing

Small and Micro Enterprises (SMEs) in Zambia account for 80% of the companies that are enlisted with the registrar of companies and yet only a few of them use digital government services (Nhekairo, 2014; Nuwagaba, 2015), particularly the e-filing service. SMEs are targeted in this study because they cumulatively account for 70% of Zambia's GDP and 88% of employment in Zambia (International Trade Centre, 2019). SMEs contribute significantly to the national treasury through taxes, thus playing a key role in national development. SMEs in Zambia are involved in various business activities in the manufacturing, trading, service and mining sectors.

In Zambia, e-payment and e-filing systems for submission of declarations and payment of liabilities for either tax, pension or company registration are considered digital innovations. The services were developed and implemented to serve citizens and businesses better, who previously had to wait for hours to have their returns manually processed. E-filing is aimed at enhancing intentional conformity to set requirements for submitting declarations while at the same time making it easier for individuals and organisations to access support. In respect of e-filing, the more declarations are submitted online, the greater the projected government income (Collins, 2011) and the easier it is to administer tax. The e-filing portal enables people to submit returns (forms) via the internet, to lodge applications to register for various services, to submit objections, to check their online accounts and to perform other online services without physically visiting the respective government offices. E-payment is aimed at simplifying the payment process for liabilities. Despite substantial investments by government to put in place innovations, SMEs that use digital services compared to the registered citizens remain few.

Many scholars (Mamta, 2012; P. Ada and Cukai, 2014; Kumar, 2017; Syed, Henderson and Gupta, 2017) utilised e-filing as well as e-payment in their models with the objective of establishing the causes of digital government adoption. For example, an empirical study was carried out in India (Kumar and Sachan, 2017) to ascertain forecasters of one's desire to adopt e-filing as well as e-payment. E-filing was also used in a model in Malaysia (Ambali,

2009) to determine influencers of one's desire to utilise digital government. Similarly, this research employed e-filing and e-payment to investigate influence of indigenous African culture as well as that of internet access on digital government uptake in Zambia.

Several research articles often point to culture (Maumbe, Owei and Alexander, 2008; Choudrie *et al.*, 2017; Mensah, Mi and Feng, 2017) as having an important influencing role on adoption of ICTs in low-income countries, yet are not explicit (Alshehri and Drew, 2011) as to the nature of what is meant by culture. Even further, there is inadequate research that endeavours to engage on notions of indigenous African culture and digital government adoption.

Prior research has primarily investigated culture albeit from a different perspective. For instance, Hofstede presented culture as a fundamental factor for technology adoption (Hofstede and Hofstede, 1980) and defines it as a tangible social prodigy representing indispensable personality of specific societies (Hofstede and Hofstede, 2005). Even if Hofstede's cultural elements are predominantly employed in prediction of intention at national level (Khalil, 2011), they are less appropriate cultural characteristics for SMEs (Syed, Henderson and Gupta, 2017). These studies overlook the lived reality of indigenous culture and the associated values and belief systems such as the spirituality of individuals, communal pressures as well as respect in a given society or region (Schein, 1984; Leung *et al.*, 2005). For instance, attention on the influence of spirituality is gaining momentum in other disciplines, such as healthcare (Hovland, Niederriter and Thoman, 2018; Mesquita *et al.*, 2018; Nahardani *et al.*, 2019) and management (Mishra and Varma, 2019). In this study, the attention is placed on the indigenous values and belief systems that define indigenous culture in African local contexts and their influence on digital government adoption.

From an African community context, culture is beyond the explanation given by Hofstede (2011). It is entrenched in practices and traditions which are centred on ethnic and family groupings (Johnson, 2013). It describes the nature of African social order. Extant practices as well as traditions emanate from systems of belief that are mainly taken to be ideal. African culture is defined by belief systems centred on communalism, spirituality, tradition of storytelling, high regard for elders as well as those in authority, and even polygamy among others (Tchombe, 1995). For example, Kenya recently signed into law polygamy (AWAPSA, 2018) and women celebrated the decision. This shows that indigenous African culture is different from what the West prescribe. Such belief as well as perception has fundamental effects on one's disposition, which is inherited by generations (Banda, 2012)

and strongly impacts (Ali, Weerakkody and El-Haddadeh, 2009b) one's perception of events such as digital government in the environment (Durmaz, 2014). Cultural influence is driven by inherent belief systems, which are stronger in African cultural formations (Idang, 2015). As stated earlier, Indigenous African culture is also characterized by superstition, which stands as an explanation for situations that are not understood (Omobola, 2013). ICTs that are not understood could easily fall into the category of being classified as superstitious elements. Such beliefs about technology could influence the desire to adopt new technologies.

Harnessing of culture can stir behaviour in a positive productive direction (Xiang *et al.*, 2010). Cultures differ from region to region. For example, cultures from Europe, America, Asia and Africa are inimitable in expression and form. Individuals in these regional communities are influenced in different ways, either negatively or positively. Harnessing the positive aspects of culture is key for digital government adoption. Indigenous African culture influence on behaviour towards adoption and use of digital government has not been investigated.

Apart from indigenous African culture, internet access influences the adoption of digital government (Chipeta, 2018; El-Haddadeh, 2019). Key drivers of internet access are the availability of infrastructure and affordability of the service. The two parameters of availability and affordability are largely expected to be catalysts for internet access, and ultimately precipitating digital government adoption. The emergence of optic fibre infrastructure on the African continent and its linkage to the nineteen undersea cables on the West coast, East coast and Mediterranean paves way for increased internet capacity. Consequently, it is anticipated that internet will become more affordable thereby increasing access. The extent to which internet access influences the adoption of digital government in Zambia, especially after the reduced prices and intentional government efforts to make internet more accessible, is a subject of this study.

1.3 Problem Statement

Zambia expressed her determination to accelerate digital government projects in 2015 by launching the SMART Zambia programme under the theme, “embracing a transformational culture for a SMART Zambia now”. The pillars of the SMART Zambia programme being Smart Government, Smart Economy and Smart Society, enabled by ICTs. A Smart Government is expected to be an efficient vehicle in the delivery system that supplies electronic

services to businesses and citizens (Anthopoulos and Reddick, 2016; Mboup and Oyelaran-Oyeyinka, 2019). Citizens in a Smart Society are expected to access the electronic services through mobile devices such as phones and iPads, Kiosks (publicly provided ICT facilities), and computers in homes and businesses. Such efforts are only useful if digital government, which is a precursor to smart government, was accepted and used by citizens, businesses and other government departments. From 2015 to date, little progress has been recorded. Identifying important underlying factors that influence citizen's behaviour towards digital technologies is central to issues of adoption in low-income countries.

This study therefore investigated the impact of indigenous African culture as well as internet access on digital government adoption in Zambia. Zambia is one such country where e-filing as well as e-payment are still considered digital innovations. The study further examined the nature of influence manifested by indigenous African culture; moderating or mediating? Literature identifies that studies that examine the causes of technology adoption are significant for countries introducing new technologies like e-filing and e-payment of taxes (Syed, Henderson and Gupta, 2017; Night and Bananuka, 2019) yet inadequate research concerning impact of indigenous African culture on digital government services exists.

The study sample comprised SMEs. Compared to large enterprises that voluntarily adopt e-filing as well as e-payment for processing their tax liabilities, the compliance levels for the small and micro enterprises is very low. This study however only covered the tax paying SMEs. The outcome of such research can strengthen the case for locally relevant policies in low-income countries aimed at improving service delivery, which service delivery has many inefficiencies.

1.4 Research Objective and Questions

The study primarily examined indigenous African culture's influence, as well as that of internet access on digital government uptake particularly electronic filing as well as electronic payment in Zambia. Although the research sample comprised tax paying SMEs, they also utilise other digital government services.

Literature reveals that SMEs do not enjoy paying taxes and that most would find ways not to pay taxes (Otto *et al.*, 2015). For example, literature shows that tax havens have been created to avoid paying taxes (Otto *et al.*, 2015). The avoidance of paying taxes and the creation of tax havens are external to this research.

Specifically, the study sought to provide empirical evidence related to the primary research inquiry below:

To what extent does indigenous African culture influence digital government adoption by SMEs in Zambia?

Secondary questions supporting primary research inquiry include:

- a) To what extent does internet access influence digital government adoption in Zambia?
- b) How is indigenous African culture exhibited in Zambia?
- c) How does social influence impact digital government adoption, when moderated and mediated by indigenous African culture?

1.5 Overview of Theory and Methodological Approach

Unified Theory of Acceptance and Use of Technologies (UTAUT) was utilised as guiding theory. This theory was chosen based on the knowledge of its validity in predicting both Intention and usage (Tarhini *et al.*, 2016). UTAUT has been extensively used by many researchers (Alghamdi, Goodwin and Rampersad, 2011; Alshehri, 2012; Ghalandari, 2012; Mtebe and Roope, 2014; Alraja, 2016; Gupta, Singh and Bhaskar, 2016) to understand technology adoption, Literature supports the use of UTAUT in a context-specific consumer technology use (Tarhini *et al.*, 2016). This notion of a context specific application of UTAUT is further supported by Venkatesh, Morris and Davis(2003).

Research philosophy employed in this research is positivism which is supported by a quantitative overarching methodological approach. The research strategy or instrument used was a survey administered by use of questionnaires. Questionnaires were administered to statistically determined sample of SMEs, who are also Taxpayers. In Zambia, tax paying population was also expected to file returns for other government services such as pension contributory schemes and company registration returns. The study was cross-sectional with a scope of tax paying population in three geographical locations; Lusaka, Copper belt Province and North-Western Province. The unit of analysis was every SME that used e-filing as well as e-payment and either utilised or hoped to use other digital government services. Data analysis was based on structural equations modeling techniques.

1.6 Thesis Roadmap

The roadmap of this thesis and how it is organised are presented below.

Chapter 2 reviews existing literature. Chapter 3 emphasizes gaps in research through a systematic literature review. Chapter 4 deepens understanding of indigenous African culture. Chapter 5 gives a country perspective of digital government, culture and infrastructure. Chapter 6 highlights the theoretical underpinning of the research model. Chapter 7 presents the research approach. Data Preparation is discussed in Chapter 8. Chapter 9 presents Data Analysis. Chapter 10 presents a discussion of results. Recommendations and conclusions are made in Chapter 11. Chapter 12 presents the references. Graphical illustration of this organisation is summarised in **Figure 1.1**.

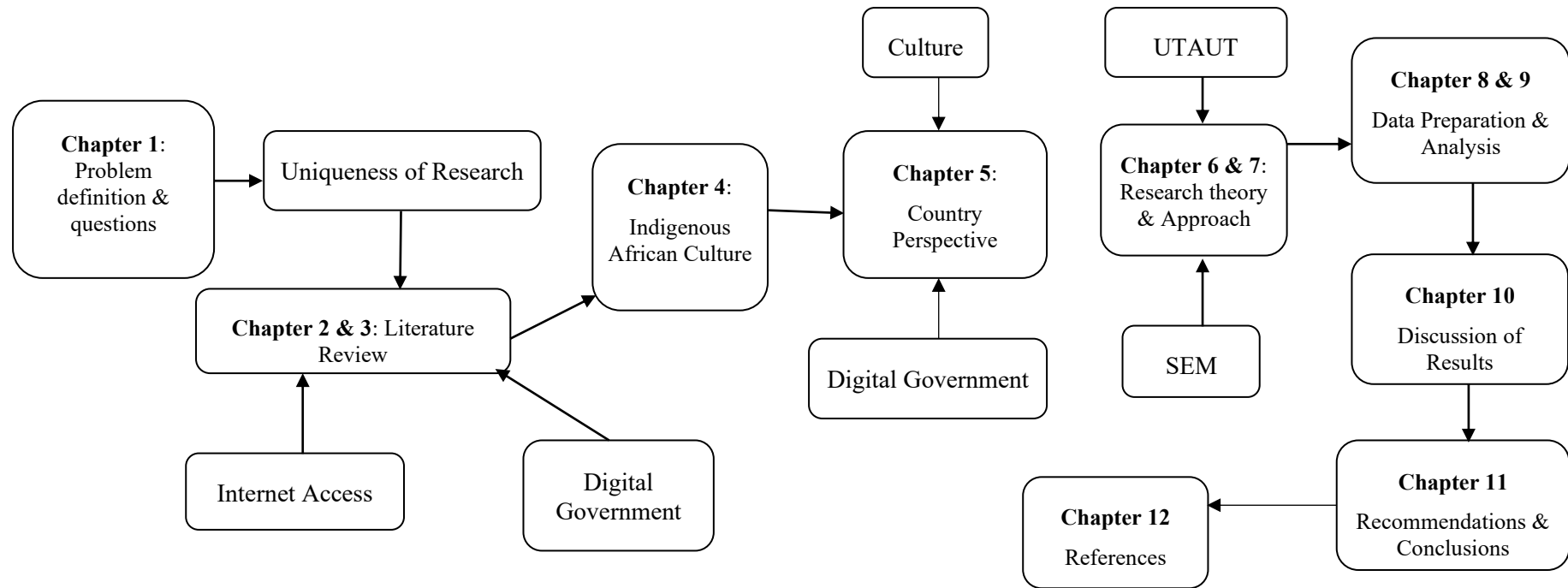


Figure 1.1: Thesis Roadmap.

CHAPTER 2

2. ZAMBIA CASE STUDY

2.1 Introduction

The previous chapter provided context and defined the influencing role indigenous culture has on digital government adoption. The chapter outlined the problem statement, the research objectives, a brief layout of methodology, research questions and highlighted importance of and contribution made by this study.

In this chapter, the Zambian country perspective of digital government, culture and existing infrastructure that supports internet access is discussed.

2.2 Demographic Information

Zambia is situated in Southern Africa. **Figure 2.1** shows the actual location of Zambia in Africa. It is a land locked country with a land mass of 752,612 Km² and population of 17.9 m. The capital city of Zambia is Lusaka whose population is about 3 million (17% of the total population). Zambia has 73 tribes, out of which over 80% migrated from other parts of Africa bringing along their culture and fusing it into the Zambian culture.

The Gross Domestic Product (GDP) of Zambia was worth 19.55 billion US dollars in 2016. The GDP has averaged 6.30 billion US dollars from 1960 to 2016. The major economic activities are mining, trade, agriculture, tourism and telecommunication. The telecommunication network in Zambia is fairly developed with the key players being CEC Liquid telecoms, Zambia Electricity Supply Corporation (ZESCO), Zambia Telecommunications Company (ZAMTEL), Airtel Zambia Ltd, MTN, ZAMNET and SMARTNET.



Figure 2.1: Location of Zambia.

2.3 Population

According to the Population and Demographic Projections of 2011 to 2035, the population of Zambia is expected to be 17, 885, 422 by the year 2020 (CSOl, 2012) as indicated in **Table 2.1**.

Table 2.1: Zambian Population by Provinces

Province/Year	2011	2015	2020 (projected)
Central	1,355,775	1,515,086	1,734,601
Copper belt	2,143,413	2,362,207	2,669,635
Eastern	1,628,880	1,813,445	2,065,590
Luapula	1,015,629	1,127,453	1,276,608
Lusaka	2,362,967	2,777,439	3,360,183
Muchinga	749,449	895,058	1,095,535
Northern	1,146,392	1,304,435	1,520,004
North Western	746,982	833,818	950,789
Southern	1,642,757	1,853,464	2,135,794
Western	926,478	991,500	1,076,683
Total	13,718,722	15,473,905	17,885,422

Table 2.1 shows that Copper belt and Lusaka provinces are the most populous, representing one third of Zambia's population and therefore can confidently be utilised for sample size selection.

2.4 The Government Structure

This section highlights key government functionaries associated with digital government. The head of Government in Zambia is the president and is deputized by the Vice President. **Figure 2.2** presents a hierarchical structure of the Zambian governance system.

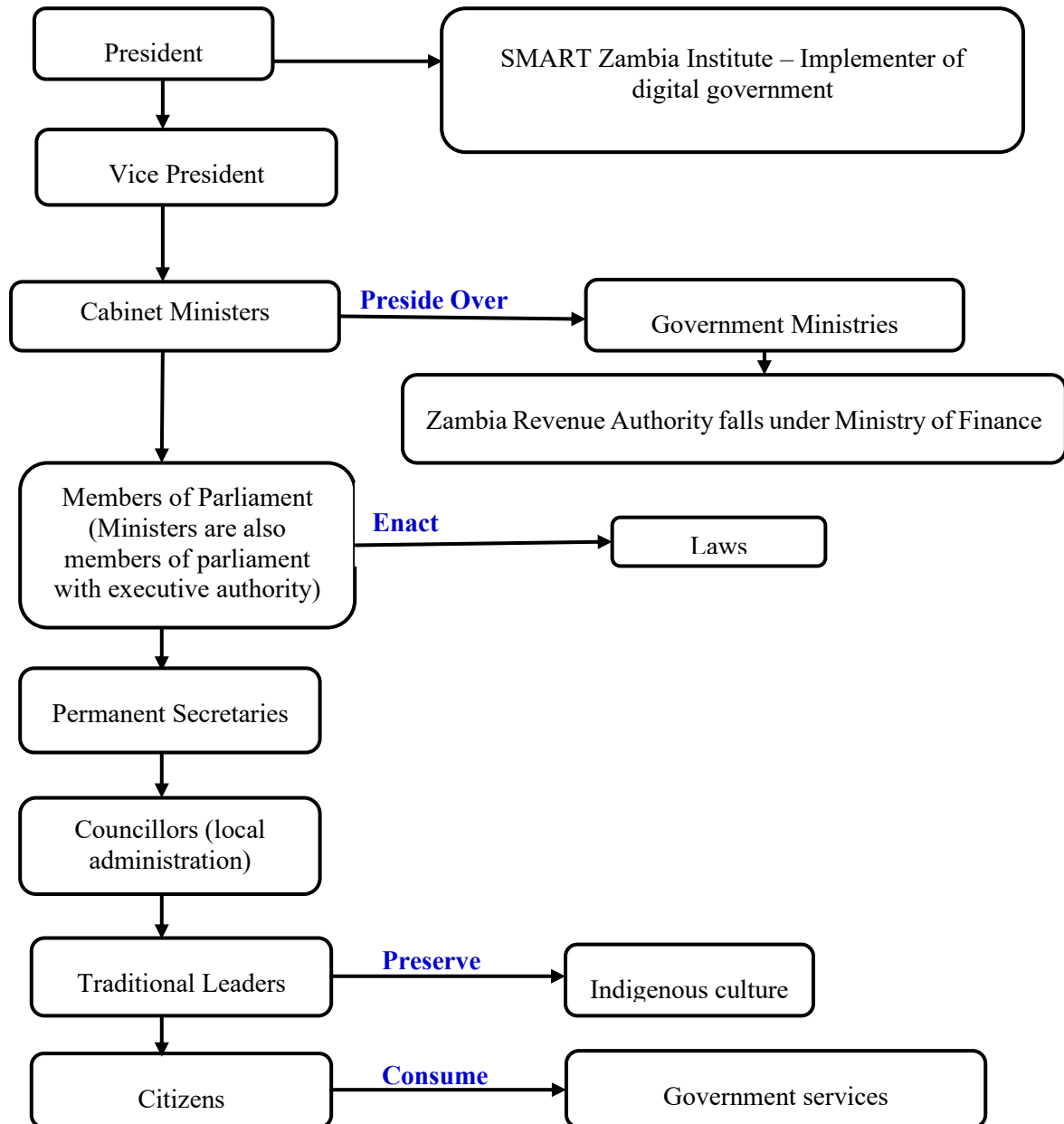


Figure 2.2: Zambian Governance Structure (YEZI Consulting, 2013).

2.4.1 Role Players and their Responsibilities

The key role players in ensuring the success of digital government in Zambia include the following; the President, the Vice President, Cabinet Ministers, Members of Parliament, Permanent Secretaries, Councillors, Traditional Leaders and Citizens. The President is strategically positioned to influence the implementation and adoption of digital government. He exercises political influence, which is necessary for transformative reforms. Currently, the SMART Zambia Institute which is mandated to implement digital government is domiciled in the office of the President. Similarly, the Vice President as a deputy to the President can influence issues related to digital government adoption. Cabinet Ministers, being in charge of ministries, are well placed to ensure that ministries implement digital government and design programmes to foster adoption. Currently, Zambia has thirty-one ministries. One of the ministries is the Ministry of Finance, which is the supervising ministry for the Tax Authority. The digital government services whose adoption is being investigated are developed and administered by the Tax Authority.

Permanent Secretaries are chief executives of government ministries. They are the link between civil servants (government employees) and Cabinet Ministers and ensure that ministerial directives are implemented. Councillors are a link between traditional leaders and political leadership. They help to create harmony between traditional and political needs. Traditional leaders are viewed as role models and custodians of traditional values. They work through headmen to propagate traditional values such as spirituality, respect for elders and authority as well as communalism described in Chapters 3 and 4. Citizens, whose normative environment is characterised by indigenous culture are also expected to consume the digital government services.

In the hierarchy, the members of parliament also play a key role in enacting enabling laws for digital government. Current laws include the constitution, the information and communication technologies Act number 15 of 2009 (ZambianGovernment, 2009b), and the electronic communications and transactions act number 21 of 2009 (ZambianGovernment, 2009a; Mzyece, 2012a).

2.5 Zambia's Digital Government Maturity Level

As stated in Chapter 1, the launch of digital government implementation in Zambia through a vehicle called SMART Zambia was initiated in 2015. Prior to this launch, attempts to

implement digital government in Zambia began in 2009. Using the maturity models stated in Chapter 2, in particular Almazan and Gil-Garcia (2008), Deloitte & Touché (Shahkooh, Saghafi and Abdollahi, 2008), Wescott (Fath-allah *et al.*, 2014) and Layne & Lee (2001), the level of digital government implementation in Zambia has grown albeit at a slow pace and is presented in

Table 2.2. The assessment was done by the Researcher based on available electronic services on each of the government websites in 2019.

Table 2.2: Zambia's Digital Government Maturity Stages by Ministry as of 2019.

Ministry	Stages						Source
	1	2	3	4	5	6	
Agriculture	√	√					www.agriculture.gov.zm
Chiefs and Traditional Affairs	√						www. mocta.gov.zm
Commerce, Trade and Industry *	√	√	√	√	√		www.mcti.gov.zm
Community Development and Social Welfare	√						www.mcsw.gov.zm
Defence	√						www.mod.gov.zm
Energy	√						www.moe.gov.zm
Finance**	√	√	√	√	√		www.mof.gov.zm
Fisheries and Livestock	√						www.mfl.gov.zm
Foreign Affairs	√						www.mofa.gov.zm
Gender	√	√					www.gender.gov.zm
General Education	√						www.moge.gov.zm
Health	√						www.moh.gov.zm

Ministry	Stages						Source
	1	2	3	4	5	6	
Higher Education	√	√					www.mohe.gov.zm
Home Affairs	√						www.moha.gov.zm
Housing and Infrastructure Development	√						www.mhid.gov.zm
Information and Broadcasting	√						www.mibs.gov.zm
Justice	√						www.moj.gov.zm
Labour and Social Security	√	√	√				www.mlss.gov.zm
Lands & Natural Resources	√						www.mlur.gov.zm
Local Government	√						www.mlgh.gov.zm
Mines & Mineral Development	√						www.nnnd.gov.zm
National Development & Planning	√						www.mndp.gov.zm
Office of Vice President	√						www.ovp.gov.zm
Presidential Affairs	√						www.sh.gov.zm
National Guidance & Religious Affairs	√						www.mngra.gov.zm
Tourism & Arts	√	√					www.mota.gov.zm
Transport & Communication	√						www.mtc.gov.zm
Water Development, Sanitation & Environmental Protection	√						www.mwdsep.gov.zm
Works & Supplies	√						www.mws.gov.zm

Ministry	Stages						Source
	1	2	3	4	5	6	
Youth, Sport & Child Development	√						www.myscd.gov.zm

*E-services under this ministry are largely driven by the Patents and Company Registration Agency (PACRA).
 **Tax Authority falls under this ministry. It is also worth noting that cabinet office has attained level 2 of the maturity level.

From

Table 2.2, only the Ministry of Commerce, Trade and Industry as well as the Ministry of Finance have attained Layne & Lee maturity model. The progress recorded by these ministries in implementing digital government services is attributed to the efforts of their agencies namely PACRA and the Tax Authority. According to the Smart Zambia Institute, Zambia has 48 electronic services published.

As stated in prior chapters, the low utilisation of the electronic services is hypothesized to be caused by indigenous African culture, discussed in Chapters 3-4.

2.6 Zambian Culture

As defined in Chapter 1 and later in Chapters 3 and 4, indigenous African culture is decomposed into spirituality, African communalism and respect for elders and authority. The three dimensions of indigenous African culture are also dominant in Zambian culture.

Zambian culture uniquely blends social attributes, rituals (Simbao, 2014) as well as norms of its seventy-three (73) tribes. Zambian culture is expressed in forms which include ceremonies, songs, crafts, religion, food, as well as dance (Mkandawire and Daka, 2018). Drumming is central to Zambian songs performed at main celebrations. The beating of a drum carries different meanings and influences behaviour differently in the African culture. A certain type of drum beating can mean a signal for danger or an invitation to a form of celebration. All these forms of traditional practices model one's thoughts as well as actions from childhood.

African culture is expressed through traditional ceremonies which are anchored on common philosophies of spirituality, communalism and respect for elders and authority. Each traditional leader (Chief) celebrates a traditional ceremony even if more than one leader come from the same tribe. The traditional ceremonies are held annually as a way of recalling the origins and

paying homage to ancestral spirits (Spirituality). Ultimately, through these ceremonies, citizens keep the cherished traditional values which they pass to future generations. **Table 2.3** presents the key traditional ceremonies celebrated in Zambia. It shows the month in which the ceremony occurs, the district, the tribe and the name of the ceremony.

Table 2.3: Zambia's culture expressed through traditional ceremonies.

Month	District	Tribe	Ceremony
January	Livingstone	Toka Leya	Lwiindi
February	Chipata	Ngoni	N'cwala
May	Solwezi	Kaonde	Kafukwila
	Senanga	Lozi	Kuomboka Nalolo
	Kalabo	Lozi	Kuomboka Libonda
June	Mbala	Mambwe/ Lungu	Mutomolo
	Kasempa	Kaonde	Nsomo
	Kabompo	Luchazi	Chivweka
July	Kawambwa	Lunda	Umutomboka
	Solwezi	Kaonde	Kupupa
	Solwezi	Kaonde	Kunyanta Ntanda
	Monze	Tonga	Lwiindi Gonde
	Kaoma	Nkoya	Kazanga
August	Katete	Chewa	Kulamba
	Chienge	Bwile	Ubuilile
	Mansa	Ushi	Makumba
	Mungwi	Bemba	Ukausefya Pangwena
	Luwingu	Bemba	Mukulu Pembe
	Mwinilunga	Lunda	Chisemwa ChaLunda Lubanza
	Zambezi	Lunda	Makundu
	Mufmbwe	Kaonde	Likumbi Lya Mize

Month	District	Tribe	Ceremony
	Zambezi	Luvale	Lubinda Ntongo
	Solwezi	Kaonde	Lukuni Luzwa
	Kalomo	Toka Leya	
September	Mpika	Bisa	Bisa Malaila
	Mufumbwe	Kaonde	Ntongo
	Solwezi	Lamba	Kuvuluka
	Mkushi	Bisa / Swaka / Lala	Inchibwela Mushi
	Mumbwa	Kaonde	Musaka / Jikubi
	Kafue	Goba	Kailala
	Mpika	Bisa	Chinamanongo
	Isoka	Tumbuka	Vikamkanimba
	Isoka	Mfungwe	Chambo
	Nakonde	Namwanga	Mulala
	Chilubi Island	Bisa	Chisaka
October	Kalomo	Tonga	Maanzi Aaibila
	Chibombo	Lenje	Kulamba Kubwalo
	Mumbwa	Kaonde / Ila	Jikumbi
	Petauke	Nsenga	Tuwimba
	Mambwe	Kunda	Malaila
	Chama	Tumbuka	Kwenje
	Samfya	Ng'umbo	Kwanga
	Chienge	Dhila	Mabila
	Kawambwa	Chishinga	Chishinga Malaila
	Mansa, Milenge, Chembe	Ushi	Chabuka Baushi
	Kabompo	Mbunda	Lukwakwa
	Kabompo	Mbunda	Mbunda Liyoyelo
	Kalomo	Tonga	Chungu
	Namwala	Ila	Shimunenga

Month	District	Tribe	Ceremony
November	Masaiti	Lamba	Chabalankata
	Mpongwe	Lamba	Chitentamo
	Luangwa	Nsenga-Lizi	Mbambala
November	Chinyunyu	Soli	Chibwela Kumushi
	Isoka	Namwanga	Ng'ondo

Source: www.zambiatourism.com

The Lwiindi traditional ceremony is celebrated in January by the Toka Leya and Tonga people. During this ceremony, the community unites as an aspect of communalism to pray for rain and to thank the ancestors for the harvest. As an expression of Spirituality, they visit the shrines to ask for the rain or for assistance to eliminate threatening diseases from their ancestors. This is done in a dignified manner such as wearing special type of clothing, approaching the shrines crawling and saying many words that show Respect.

The N'cwala ceremony is celebrated in February by the Ngoni people of Chipata (originally from South Africa) in the Eastern part of Zambia. It is held to offer thanksgiving to God and the ancestors for the first harvest of the year.

Like the Ngoni people, the Kaonde people of Kasempa in North Western part of Zambia also commemorate the traditional first harvest ceremony called "Juba ja Nsomo". The ceremony is characterised by offering thanks to ancestors. The three cultural aspects of communalism, spirituality and respect are expressed.

Likumbi Lyamize is celebrated by the Luvale people (incorporating Chokwes) of Zambezi in North Western Province. The ceremony is held to commemorate their heritage and to remember their trek into Zambia from the Democratic Republic of Congo. The Luvale and Chokwe possess deep-seated spiritual beliefs connected to their past (Penoni, 2018). Luvale as well as Chokwe's spirituality is linked to their ancestors' traditions and is expressed in their day to day lives. The link with ancestry has a greater meaning for them. Moreover, they believe that preservation of ancestral beliefs was critical to guarantee their safety. As a mode of safeguarding ancestral beliefs, propitiation rituals are ordered. For the Luvale as well as Chokwe, life is valueless and powerless in the absence of ancestral spirits. Ancestral spirits

take the place of gods that are close to them; being portrayed as part of ‘tribal’ family with the potential to offer solutions. This is true for almost all tribal groupings in Zambia. Likumbi Lyamize is associated with various Makishi dancers as shown in **Figure 2.3**. Having received tutelage in the bush encompassing real-life abilities including education covering nature, spirituality as well as societal ideals over a period of one month or more, boys are re-integrated as part of community. The boys stage Makishi masquerade containing beautifully painted masks characterising various spiritual characters. It can be argued that these traditional practices have abiding effects on the conduct as well as judgement of these citizens (SMEs in particular).



Figure 2.3: Culture expressed through Makishi Masquerade.

In recognition of artistic and educational roles played by Makishi, the United Nations Educational, Scientific and Cultural Organization declared the Makishi a master piece of oral and intangible heritage of humanity in 2005 (UNESCO, 2010).

These practices leave an indelible mark on the mind of citizens, which is expected to influence their actions and beliefs. Proverbs are often used to influence one’s behaviour. The following are examples of the many African adages that are used to influence behaviour;

- a) **Vula kasendekela musha mutondo, mutu anamonomo. Literally translated as “if the rain gets heavy under a tree, then it has sensed the presence of a human being.**

In African society, when one encounters misfortune, it is attributed to another person’s actions. This often happens by one standing in the middle of the village, shouting and accusing others of the misfortune. Such statements are made if he or she is aware of the presence of an old person in the village. Superstition, a belief in a spiritual being associated

with unexplained experiences, is an aspect found in African culture. Not all users of digital government appreciate ICT. Such belief systems can potentially impact their ability to adopt ICTs.

- b) **Ndoho yakanuke kuyayema, alioze kuyishi kulembuka. Ndoho yamukulwana yakuyema nyi kulembuka. Literal translation is that food prepared by a young person is nice but the one prepared by an adult is better.**

The meaning is that in the heart of an adult, you find knowledge and wisdom more than there is in a young person's heart. This adage instils the cultural value of respect. Adults and those in authority must be respected. This potentially means that elders and those in positions of authority can influence one's desire to adopt or use digital government services.

- c) **Tuka lutwe, keshi kutuka nyima. Literal translation is that one should insult the future and not the past.** The meaning is that a person should be closely associated with his family members and the society in which he lives rather than external people that are foreign to him. This adage propagates communalism. By being closer to one's community, one acquires community norms or behaviour.

- d) **Mwafwa mukula mwasalakana muyombo. Literal translation is that when a "mukula" tree dries, you should plant another tree called "muyombo".**

The meaning is that when a village headman dies, his nephew or his grand child should inherit him so that traditions are passed from one generation to another, which is an aspect of communalism.

- e) **Mukanwa kamukulwana mwanuka mwawu. Literal translation is that an adult's mouth smells when he yawns.**

This adage inculcates an aspect of respect for elders and authority in the young people. It means the words that come out of an adult's mouth are very heavy or important and therefore should be obeyed and followed. Such a statement has the ability to influence behaviour especially that in the Africa culture, young people are not expected to question adults.

- f) **Meya aswita kanuke, keshi kumana pwila shina aswita mukulwana. Literal translation is that the water that a young person draws will not quench the thirsty. Only the water that an adult draw will quench the thirsty.**

Again this adage encourages young people to respect and listen to adults. Adults are believed to poses wisdom and knowledge to rule over cases in an exhaustive manner than young people.

The young people grow in an environment in which culture is inherited and eventually passed on to their children. Regardless of the education acquired and the social status, tradition continues to contribute to the shaping of one's thoughts and actions. We can summarise that the three aspects of spirituality, communalism and respect for elders and authority discussed in this section are common to Zambian culture.

Section 2.6 endeavoured to answer the secondary question, "How is indigenous African culture exhibited in Zambia?". The section brought to the fore salient aspects of indigenous African culture and explained how these are espoused by SMEs in Zambia. Section 2.7 considers internet access in the context of existing enabling ICT infrastructure in Zambia.

2.7 Internet Access in Zambia

The term internet access refers to the ability by individuals to access and use the internet in order to get services provided by government. As stated earlier, internet access is enabled by availability and affordability. Affordability was discussed earlier. **Figure 2.4** presents the underlying infrastructure that supports internet access in Zambia while **Figure 2.5** shows that Zambia has access to several undersea cables that provide internet to countries in Africa. The two figures show that availability has been enabled in Zambia.

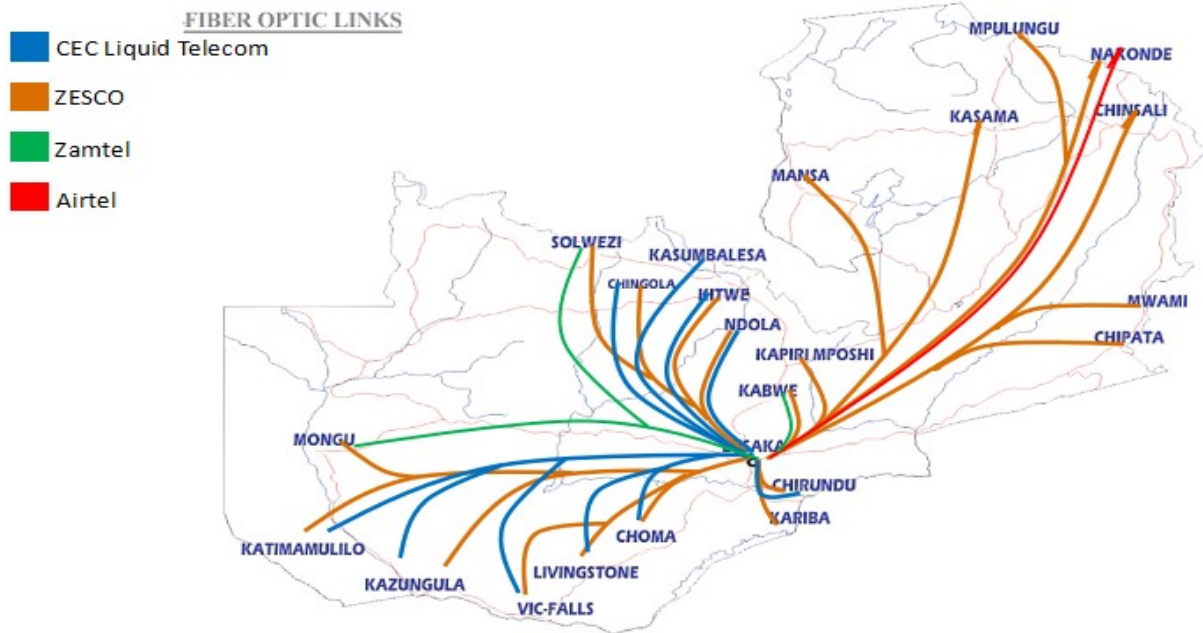


Figure 2.4: Underlying Infrastructure to enable internet access.

2.7.1 Network Infrastructure showing Zambia’s position

Statistics indicate a population of 2.42 million internet users in Zambia by 2018 against a total population of 16.9 million giving a penetration rate of 14.3 percentage points (ZICTA, 2018). For a country that desires to increase the digital government development index, there is need to raise the penetration rate. Currently, there are five major distributors of broadband infrastructure in Zambia. Top among them is Zambia Electricity Supply Corporation (ZESCO), followed by CEC Liquid Telecom, ZAMTEL, MTN (not shown in the figure), and Airtel. They purchase internet from third party suppliers and redistribute to individuals and businesses. Apart from CEC Liquid Telecom that has optic fibre running from South Africa, the rest interconnect with neighbouring countries, who themselves interconnect with other suppliers or connect directly to one of the nineteen undersea cables on the West coast, East coast and Mediterranean as presented in **Figure 2.5**.

On the West coast are SAT3 or SAFE, MaIN OnE, GLO-1, WACS, ACE, SAex, and WASACE. On the East coast are SEAS, TEAMs, Seacom, Lion 2, Lion, EASSY, and BRICS. The Mediterranean undersea cables include Atlas Offshore, SAS-1, SEA-ME-WE 4, I-ME-WE and EIG. For Zambia, the West coast and East coast are more cost effective than the Mediterranean. In either case, Zambia has to depend on the good neighbourhood of the eight

neighbours, of whom Tanzania and Namibia are geographically well positioned in terms of proximity of access points at Tunduma and Capirivi Strip respectively.

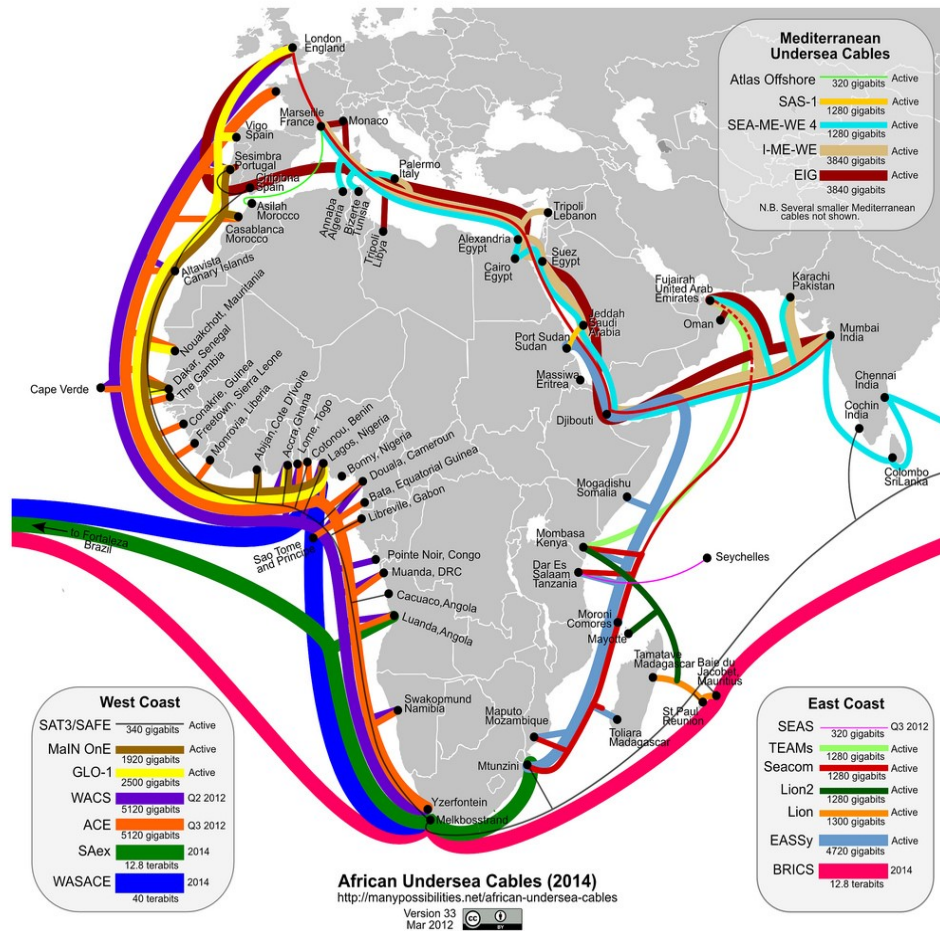


Figure 2.5: African Undersea cables from which Zambia can access internet.

(Source: http://www.nashua.co.za/wp-content/uploads/2012/06/Africa_Undersea.jpg)

2.8 Conclusion

Chapter 2 presented the case of Zambia in terms of demographics, government structures, Zambian culture, its role and ICT infrastructure for internet access. In the next chapter, the underpinning theory governing this study is discussed. The eight synthesized Information Systems theoretical models from which the underpinning theory is derived are also discussed. The next chapter also develops the hypotheses used in the investigation.

CHAPTER 3

3. LITERATURE REVIEW: DIGITAL GOVERNMENT & CULTURE

3.1 Introduction

Chapter 2 presented the country perspective in terms of demographics, government structures, Zambia's digital government maturity levels, culture and ICT infrastructure for internet access. The chapter also explained the potential effect of indigenous African culture on digital government adoption.

This chapter provides insights into digital government, reviews existing literature on culture in relation to digital government and SMEs. The review also considers the role of internet access on digital government adoption.

3.2 Digital Government

Different terms are applied when describing Digital Government. These include electronic Government, Virtual Government (Fountain, 2001), E-Governance (Alcaide–Muñoz *et al.*, 2017), Online Government, E-Gov (Alshehri, 2010) and even smart government. These terms are associated with different and distinct stages in the evolution of digital government. This section therefore describes the fundamental building blocks of digital government and provides background knowledge that helps to understand digital government and its role in generating and delivering electronic services to citizens and businesses.

3.2.1 Definition

Digital government has been defined to be a socio-technical phenomena or mechanism by which government provides efficient services using ICT in a seamless and integrated manner (Chugunov, Kabanov and Misnikov, 2017). A slight variation to this definition is made in this study by replacing the word integrated with interfaced, a socio-technical phenomena or mechanism by which government provides efficient services using ICT in a seamless and interfaced manner. The use of the word interfaced arises from the understanding that various government agencies and departments operate independently but collaboratively. It is the processes of these independent entities that feed into each other (interface) to complete a

government task. Citizens as well as businesses (SMEs) access Government amenities using electronic platforms with minimal or no human contact. Efficient and seamless interactions occur within government to process the requests from citizens and businesses.

The interactions take many forms (Viswanath, 2016). The most common ones being Government to Citizens (G2C), Government to Businesses (G2B) and Government to Government (G2G) (Davison, Wagner and Ma, 2005; saho, 2012; Ganesh, Premkumar and Priya, 2019). Some scholars have added another category of interaction named Government to Employee (G2E) (Irawati and Munajat, 2018), defining the interaction between employees and government. G2E and G2G are considered to be intra levels of cooperation while G2C and G2B are considered external levels of cooperation (Irawati and Munajat, 2018).

In the G2C category, government develops secure platforms that deliver electronic services to citizens. Issues of performance and security of the platforms are critical for citizens. Government provides infrastructure and appropriate authentication to enable access to services by citizens electronically. G2B focuses on delivery of services to businesses. In addition to performance and security, businesses require interfaced platforms that deliver unified services. G2G aims at providing open (interfaced) platforms within government that enable provision of unified services.

Although, digital government has been defined as a socio-technical phenomenon, socio aspects are hardly emphasized and yet are fundamental. **Figure 3.1** below illustrates the definition.

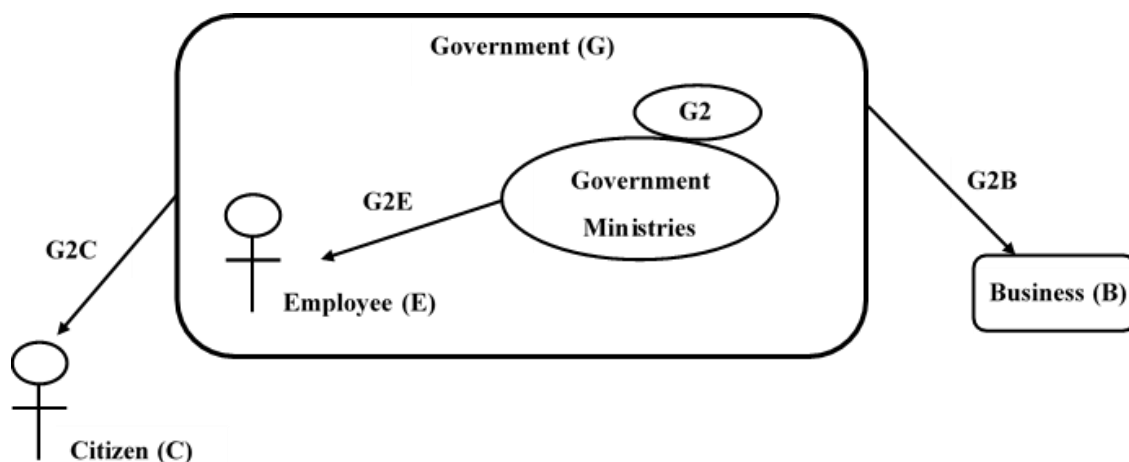


Figure 3.1: Digital Government Interactions

3.2.2 Evolutionary Stages of Government

Traditionally, governments are known to be bureaucratic and largely manual. Increased Information and Communication Technology (ICT) usage has triggered government evolution (Heeks, 2002; Gil-garcía and Martínez-moyano, 2005). Evolution's key drivers (Gil-garcía and Martínez-moyano, 2007) include the modernisation of processes, improvement of internal efficiency, and increased access to information (Janowski, 2015) through universal access mechanisms (Narayan, 2014). Driven by these imperatives, public sector (government) is transforming from a manual environment to a digital one in which its records are digitised, management information systems are provided to aid decision making and processing efficiencies are improved using various technologies.

The evolution goes through several stages from standalone administrative systems and mere web presence (static) to a fully engaged and agile government (Ganesh, Premkumar and Priya, 2019).

The initial stages involve implementing Local Area Networks, setting up servers, providing web presence and implementing institution specific systems, a process referred to as digitisation (**Figure 3.2**) (Gil-garcía and Martínez-moyano, 2007; Janowski, 2015).

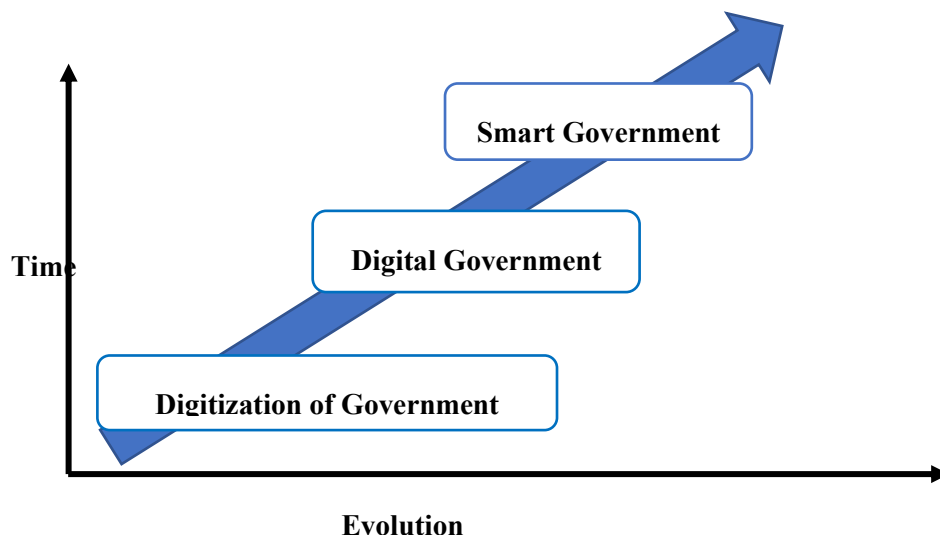


Figure 3.2: Stages in the evolution of government.

This stage is a precursor to digital government which is driven by the need to reform government, increase electronic collaboration between government agencies and also between

government ministries, simplify decision making process, reduce duplicity of functions and provide efficient service to citizens as well as to businesses. The digital government stage progresses to a Smart government stage where collaboration is purely digital. Modern technologies on which digital government is anchored include “Big data” and related analytics, Cloud computing through which Software as a Service Platform as well as Hardware as a Service among others are provided, including workflow management. These are provided as components from which web services consumed by citizens and businesses are generated.

Electronic governance is the use of digital government platforms to govern. Without digital government platforms, electronic governance is not practical.

Digital government is a precursor to Smart government, which is application of inventive strategies, business epitomes, as well as technologies aimed at addressing challenges confronting public institutions. It can be argued that electronic governance is embedded within smart government, a future stage of digital government for most countries. Smart government seeks to address key United Nations sustainable development aspirations, in particular goal number 11 (Lopes, 2017), sustainable cities and communities. Some of the components used in developing smart governments include wearable devices (Guk *et al.*, 2019), localized big data and data mining solutions(Massaro *et al.*, 2019), mobile platforms, and government as a platform (O’Reilly, 2010) resulting in “Do-it-Yourself” Government as presented in **Figure 3.3**.

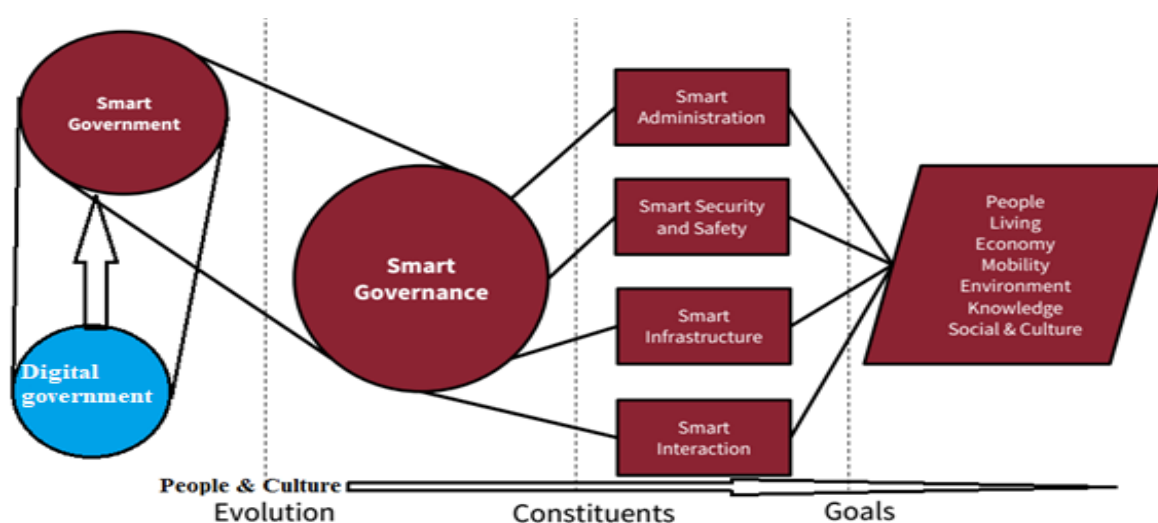


Figure 3.3: Smart Government – adapted (Scholl and Scholl, 2014; Lopes, 2017).

Driven by the need to reach out to citizens and businesses, provision of oversight for citizens and businesses, effective and efficient engagement, Smart government provides platforms for smart governance in all areas of public service delivery as highlighted in **Figure 3.3**.

Smart government can only be realised if digital government itself is understood, well implemented and adopted by citizens and businesses. It is worth emphasising that digital government is contextualised (Janowski, 2015) to suit local needs and can be at different maturity levels in terms of implementation. The understanding of the maturity levels guides the developers or implementers to design appropriate digital government projects that incorporate cultural needs of citizens as well as businesses alike. **Table 3.1** provides some of the scholarly models that are applied when measuring information systems maturity levels.

Several maturity models (Davison, Wagner and Ma, 2005; Andersen and Henriksen, 2006; Kumar *et al.*, 2007; Klievink and Janssen, 2009) have been developed to assess or guide digital government projects. Some of these models or a hybrid of them have been used by governments to align their digital government implementations. The underlying philosophy for these maturity models is similar; the need for transformation in governments. This research argues that even if the desired maturity level is attained, either internet access or indigenous cultural dimensions or both could hinder the adoption of digital government. **Table 3.1** presents the various models used to measure digital government maturity.

Table 3.1: Digital Government Maturity Models.

Maturity Model	Stages					
	1	2	3	4	5	6
Accenture (Accenture, 2003; Shareef, 2012)	Online presence	Basic capabilities	Service Availability	Mature delivery	Service transformation	NA
Alhomod Maturity (Fathallah, Cheikhi, Al-qutaish, & Idri, 2014)	Web presence	Interaction	Transaction	Integration	NA	NA
Almazan and Gil-Garcia (Sandoval-Almazán & Gil-Garcia, 2008)	Web presence	Static information	Interaction	Transaction	Integration	Political participation
Andersen and Henriksen (Andersen & Henriksen, 2006)	Cultivate	Extend	Mature	Evolution	NA	NA
Cisco (Cisco, 2007)	Interact	Transact	Transform	NA	NA	NA
Chandler and Emanuel (Fathallah et al., 2014)	Information	Interaction	Transaction	Integration	NA	NA
Chen (Chen, Chen, Huang, 2006)	Catalogue	Transaction	Vertical integration	NA	NA	NA
Deloitte & Touché (Shahkooh, Saghafi, & Abdollahi, 2008)	Information	Two-way transaction	Multi-purpose portals	Portal personalisation	Clustering of common services	Full integration & enterprise transaction
Gartner group (Shahkooh et al., 2008)	Web presence	Interaction	Transaction	Transformation	NA	NA

Maturity Model	Stages					
	1	2	3	4	5	6
Hiller & Belanger (Belanger & Hiller, 2006)	Information	Two-way communication	Transaction	Integration	Participation	NA
Howard (Howard, 2001)	Public	Interact	Transact	NA	NA	NA
Kim and Grant (Grant & Kim, 2012)	Web presence	Interaction	Transaction	Integration	Continuous improvement	NA
Layne & Lee (Layne & Lee, 2001)	Catalogue	Transaction	Vertical integration	Horizontal integration	NA	NA
Lee and Kwak (G. Lee & Kwak, 2012)	Initial conditions	Data transparency	Open participation	Open collaboration	Ubiquitous engagement	NA
Moon (Moon, 2002)	Information	Two-way communication	Financial & Service Transaction	Integration	Political Participation	NA
Reddick (Fathallah et al., 2014)	Catalogue	Transaction				NA
Shahkooh (Shahkooh et al., 2008)	Online presence	Interaction	Transaction	Integrated & transformed	Digital democracy	NA
Siau and Long (Siau & Long, 2005)	Web presence	Interaction	Transaction	Transformation	e-democracy	NA
United Nations (UNDESA, 2018)	Emerging information services	Enhanced information services	Transactional services	Connected services	NA	NA

Maturity Model	Stages					
	1	2	3	4	5	6
Wescott (Wescott, 2001)	Email & internal network	Inter-organisational & information publicly accessed	Binary communication	Value based interactions	Digital democracy	Government that is integrated (joined)
West (West, 2004)	Bill board	Partial service delivery	Portal	Interactive democracy	NA	NA
Windley (Windley, 2002)	Simple website	Online government	Integrated government	Transformed government	NA	NA
World Bank (Karokola and Yngström, 2009; World Bank, 2015)	Publish	interact	transact	NA	NA	NA

To achieve digital government maturity stages described above, it is important that digital government developers adopt standards by the Organization for the Advancement of Structured Information Standards (OASIS) (Borras, 2004; Heimdall, 2017; UNDESA, 2018; Reiff and Humbert, 2019), which are presented in Section 3.2.3.

3.2.3 Generally Applied Digital Government Standards

Standards are key when carrying out or executing ICT programmes. Digital government, which focusses on service provision using digital media, as well as internal processes modernisation, is not any different (Borras, 2004; Misra, 2008; Mkude and Wimmer, 2013). **Table 3.2** presents digital government standards developed by the Digital Government Technical Committee of OASIS.

Table 3.2: Ten digital government standards.

Standards	Description
1	“Search Service Interoperability” This standard is aimed at enhancing the discovery and use of government data and information resources, thereby serving goals such as government transparency and accountability, efficiency of commerce, education, scientific research, and a range of other societal objectives.
2	“ebXML Messaging for use within digital government”. The electronic business eXtensible Markup Language (ebXML) messaging specification provides for: Citizen to Government Business ‘line of Business’ applications to Government Agency to Agency Communications Agency to Government Common Service Government to Government
3	“Harmonised Taxonomies.” This standard is key to support the need for interfacing and data exchange
4	“Common Data Definitions” This standard is key to support the need for interfacing and data exchange
5	“Use by Governments of ebXML Registries” Key to enable interoperability.
6	“Use by Governments of the electronic processes XML (eprXML) Standard” This standard enables collaboration across platforms.
7	“Workflow Standards” An increasingly important component of delivering digital government services is the need for a workflow system to underpin the e-service, especially when the service requires input from other systems.
8	“Records Management in Government”. The focus is on when, where and how the information involved in digital government interactions (G2G, G2C, G2B) becomes formal; and identifying, and obtaining all the right information to constitute an authentic record.
9	“Semantic Interoperability – Business Implementation Guidelines”. In order to ensure that systems talk to each other and understand each other this standard provides an XML centred and semantically interoperable information architecture.
10	“Naming and Design Rules for XML Schemas”. This standard provides for common Naming and Design Rules for use in XML schemas

Applying these ten standards coupled with use of appropriate maturity models guides digital government developers to design suitable architectures.

3.2.4 Digital government and Development

The concept of development, and the role of digital government in enabling development continues to be debated (Qureshi, 2013; Sein *et al.*, 2018). Development is generally understood as the need to uplift people who live in conditions of deprivation, not only economic deprivation, but also other types of human and social deprivation, to a place where they can live the lives they desire (Walsham, 2017). Using Digital government platforms, governments seek to deliver efficient services to businesses as well as citizens. ICT for development (ICT4D) researchers are of the common belief that ICT plays a fundamental function in development, and also that ICT by itself does not provide a silver bullet to development (Zheng *et al.*, 2018). It is therefore increasingly necessary to conceptualise the place of ICT4D as a part of larger holistic programmes on development such as the Sustainable Development Goals (SDGs).

There is a degree of development required in every country, and there are increasing calls to allow for the multiplicity of culture at the level of the specific context (Andoh-Baidoo, 2017). While ICT is meant to enable development such as digital government, its adoption is influenced by the multiplicity of cultural factors.

Table 3.3 shows the Human Development Index (HDI) juxtaposed with the digital government index (EGDI). The two indices covary, indicating a strong relationship between them. This also shows that factors that influence digital government adoption also influence economic development and are context specific (indigenous dimensions). Note that **Table 3.3** stops at 2018 because this is when the last EGDI was done.

Table 3.3: E-Government Development Index by Human Development Index

Year	2010		2012		2014		2016		2018	
	EGDI	HDI	EGDI	HDI	EGDI	HDI	EGDI	HDI	EGDI	HDI
World average	0.44	0.697	0.49	0.713	0.47	0.72	0.49	0.727	0.55	0.72
Europe	0.62	0.80	0.72	0.82	0.69	0.83	0.72	0.83	0.77	0.85
Americas	0.48	0.80	0.54	0.81	0.51	0.82	0.52	0.82	0.59	0.75
Asia	0.44	0.67	0.50	0.69	0.50	0.71	0.51	0.71	0.58	0.72

Oceania	0.42	0.697	0.42	0.71	0.41	0.73	0.42	0.73	0.46	0.74
Africa	0.27	0.50	0.28	0.52	0.27	0.53	0.29	0.54	0.34	0.57

Source: United Nations 2018 Survey (UNDESA, 2018).

With 0.2882 EGDI, Africa faces momentous task of service delivery through digital means. Narrowing down the focus to Southern African Development Community (SADC), to which Zambia belongs, Zambia's Online Services Component (OSC) index rating shows that online services are available (UNDESA, 2018) for adoption and use but the EGDI shows that the adoption is low. This is consistent with the E-Participation Index (EPI) rating for Zambia. This study seeks to empirically bring to the fore the role of indigenous African culture on low uptake rate of digital government in Zambia. **Table 3.4** depicts the EGDI for countries in Southern Africa.

Table 3.4:EGDI for SADC countries.

Position	Country	EGDI	OSC	EPI
1	Mauritius	0.6231	0.7029	0.50 - 0.75
2	South Africa	0.5546	0.5580	> 0.75
3	Seychelles	0.5181	0.4058	0.50 - 0.75
4	Botswana	0.4531	0.2826	< 0.25
5	Namibia	0.3682	0.2826	0.50 - 0.75
6	United Republic of Tanzania	0.3533	0.5725	0.50 - 0.75
7	Zambia	0.3507	0.3696	0.25 – 0.50
8	Zimbabwe	0.3472	0.2609	0.25 – 0.50
9	Swaziland	0.3412	0.2754	0.25 – 0.50
10	Angola	0.3311	0.3478	0.25 – 0.50
11	Lesotho	0.2770	0.1377	< 0.25
12	Madagascar	0.2416	0.2246	0.25 – 0.50
13	Malawi	0.2398	0.2174	< 0.25
14	Mozambique	0.2305	0.2029	0.25 – 0.50

15	Democratic Republic of Congo	0.1876	0.0870	< 0.25
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Source: United Nations 2016 Survey (UNDESA, 2016, 2018).

With an EGDI of 0.3507 and OSC of 0.3696, Zambia would be able to reduce bureaucracy in her service delivery processing chain if only the existing services were fully utilized. The extent to which these services are adopted and utilised depends on the inherent dominant behavioural drivers amongst other factors. The inherent dominant behavioural factors in an African context are comprehensively discussed in Chapters 2 and 4.

3.2.5 SMEs in Zambia

SMEs in Zambia were largely driven by individuals seeking livelihoods in the informal economy due to shrinking employment opportunities in the formal economy or sector (Aurick *et al.*, 2017). The shrinking employment opportunities increased after the implementation of structural adjustment programmes (SAPs). SAPs are a set of economic reforms that a country adheres to in order to secure a loan from the International Monetary Fund and/ or the World Bank. The economic reforms included reduced government spending, opening to free trade, controlling budget deficits, privatising public sector companies and services, dissolving parastatals, eliminating subsidies and cutting public support for social services (Heidhues and Obare, 2011). These measures resulted in increased unemployment levels. Survival and income generation for these individuals that had lost their jobs was seen in the creation of SMEs.

SMEs are often defined differently by different countries based on the number of employees, the annual turnover or even the level of investment of enterprises. SMEs are key for Zambia's economic development. As earlier stated in Chapter 1, SMEs generate employment and contribute to human development (Nhekairo, 2014; Nuwagaba, 2015; International Trade Centre, 2019). The structure of SMEs in Zambia is defined by the Act of Parliament (Singh, 2016), Act No. 29 of 1996 as follows:

"micro enterprise" means any business enterprise-

- a) whose amount of total investment, excluding land and buildings, does not exceed ten million Kwacha;
- b) whose annual turnover does not exceed twenty million Kwacha; and The Laws of Zambia Copyright Ministry of Legal Affairs, Government of the Republic of Zambia
- c) employing up to ten persons:

Provided that the values under paragraphs (a) and (b) may be varied by the Minister, by statutory instrument;

"small enterprise" means any business enterprise-

- (a) whose amount of total investment, excluding land and building, does not exceed-
 - i. in the case of manufacturing and processing enterprises, fifty million Kwacha in plant and machinery; and
 - ii. in the case of trading and service providing enterprises, ten million Kwacha;
- (b) whose annual turnover does not exceed eighty million kwacha; and
- (c) employing up to thirty persons;

Provided that the values under paragraphs (a) and (b) may be varied by the Minister, by statutory instrument.

The values stipulated in the Act of 1996 have since been revised in subsequent Acts and policies such as the Small Industries Development Act, The Commercial, Trade and Industrial Policy, Small Enterprises Development Act, and the Micro, Small and Medium Enterprise Development Policy.

The economic activities of SMEs are mainly distributed around the traditional economic sectors that rely on social networks (Aurick *et al.*, 2017; Liu *et al.*, 2017). The performance and strength of the SMEs is dependent upon the strength of their social networks among others where network cohesion serves as an important structural feature that moderates the influence of interpersonal networks (Liu *et al.*, 2017). Friedkin (1993) noted that personal influence exhibited a stronger growth within more cohesive social networks than less cohesive ones. Social networks therefore play a key role in positioning SMEs in the market. Similarly, indigenous culture, which can be viewed as being congruent with social networks, plays a key role in positioning SMEs in the digital government domain.

3.2.6 Digital Government Stimuli or Enablers

There are many factors that impact digital government uptake. The extent to which these factors impact digital government development and adoption differs from region to region. Due to these regional context differences, there is hardly a universal blueprint for digital government. Many Scholars (Mawela, Ochara and Twinomurinzi, 2017; Xia, 2017; Olaniyi, 2019) have identified political, financial, technological and even culture as key factors.

3.2.6.1 Political

The political factor defines the level of leadership inherent in the governance system. This factor is expressed as political will, which increases the chances of succeeding in implementing as well as adopting digital government initiatives. Lack of political will leads to digital government implementation failure. Mzyece (2012b) noted the need for political will at different levels of governance; national, provincial and local. For Zambia, the launch of the SMART Zambia Institute at national level requires corresponding structures at provincial and local levels to enable coordination and support for digital government programmes. Currently, such structures are lacking at lower levels.

3.2.6.2 Financial

The financial factor is largely dependent on the political factor. Without the political will, digital government programmes cannot be funded. Without funding, it is not possible to implement digital government programmes and ultimately, there would be no digital services for citizens and businesses to adopt.

3.2.6.3 Technological

The technological factor is dependent on financial factors. In the absence of funding, it is not easy to procure necessary technologies required for digital government reforms. The technological factor takes a fundamental dimension as it creates the digital government artefact. Without technological factor, there would be no digital government.

3.2.6.4 Culture

As noted in Chapter 1, culture is believed to influence digital government adoption (Yavwa and Twinomurizi, 2018). Cultural issues require more attention than the other factors because culture has several contextual dimensions (Alshehri and Drew, 2010) whose impact on digital government adoption is yet to be investigated.

Scholars have considered the impact of some dimensions of culture largely at national, organisational and group levels. There is limited research that has considered the impact of culture in an indigenous context such as African context. While political, financial and technological factors may be universal and well researched, cultural factors (Al-Lamki, 2018)

are diverse and thus require examining from an indigenous perspective. This study seeks to bring to the fore indigenous cultural contexts influencing digital government in Africa.

3.3 Cultural Contexts

Different contexts are associated with culture, from its definition to its manifestation. Schein(1984) defines culture based on a form of elementary beliefs conceived, found or established . The discovery occurs in the process of acquiring knowledge of the environment and adapting therein. External adaptation involves coping with new environments and other cultures arising from migration while internal integration involves coping with different ethnic groups and efforts to co-exist in a cultural heterogeneous environment. The acquired knowledge is inherited by future generations and becomes the right way of perceiving, thinking as well as expression when confronted with problems .

3.3.1 Forms of Culture

Culture takes different forms. The five types of culture commonly considered include group, national, organizational, professional and global culture (Leung *et al.*, 2005). Group culture describes a belief and value system of a group. National culture is exhibited through perceived collective behavior of people in a nation, while organizational culture relates to perceived collective behavior of staff of an organization. Professional culture is a perception of collective behavior of people of a specific profession. Global culture relates to global behavioral patterns exhibited in a global world. Culture can therefore be further described as a pattern of belief systems governing people's approach to life (Hall, 1976).

Hofstede's seminal work (Hofstede and Hofstede, 2005) conceptualizes culture based on national dimensions and describes national culture by a shared mental conditioning which gives identity to a group of people.

3.3.2 Indigenous Aspects of Culture

Using the definition by (Leung *et al.*, 2005) and to a certain extent by Schein (Schein, 1984), culture can be conceptualized in an indigenous context. Both Leung and Schein conjecture that culture is anchored on an indigenous value and belief system of individuals comprising a given society or region. For example, the value system of Eastern (Asia) and African societies includes message passing through idioms, adages or aphorisms. These depict cultural constructs that portray the characteristics of the individuals in that society. Their perception of

technology such as digital government is impacted by inherited subjective norms or acquired social norms in the environment. This assertion is supported by literature which reveals that only 20% of the success of digital government is attributed to technology (Asianzu and Maiga, 2012) while 80% is attributed to social or cultural factors (Asianzu and Maiga, 2012). Yet many governments spend more resources on technical factors than on the cultural imperatives. Consequently, digital government initiatives failure rate remains high (Heeks, 2009; Knox and Janenova, 2019). This is generally true for Africa and Zambia in particular where the digital government projects began in 2009 (Bwalya, 2009a) and yet most mainstream government ministries only have static websites to date.

Literature highlights the need to take into account cultural orientation of a society when designing and implementing digital government systems to avoid misalignment (Heeks, 2009). The misalignment arises from the use of external vendors (Wachira, 2014), who hardly understand the local cultural environment in which the intended beneficiaries of digital government services reside. They tend to adapt the digital government implementations to their own socio-technical and cultural contexts (Alshehri, 2012) which may not be suitable for low-income countries. The United Nations (UNDESA, 2018) attributes the lagged digital government implementation and adoption in low-income countries to a multiplicity of factors. The factors indicated are largely technical, void of the important aspects of indigenous culture.

Culture is known to exert influence on societies resulting in either remarkable gains (Banda, 2012) or retrogression. The Confucian work dynamism construct for example is believed to be responsible for the rapid economic growth of East Asian Societies between 1960 and 1990 (Davison and Martinsons, 2016). Another Chinese cultural super construct named guanxi, composed of favour, trust, dependence, and adaptation (Leung, 2001; Davison and Martinsons, 2016) influences behaviour towards online consumption of e-commerce services on TaoBao, an e-commerce portal in China. These constructs demonstrate that culture can be positively harnessed once its direction of causality is identified.

Prior studies (Buabeng-Andoh, 2012; Mamta, 2012; Blut and Wang, 2020) reveal existence of supporting as well as inhibiting views concerning ICT which determine readiness to accept or not to accept new technologies. These beliefs constitute compelling or inhibiting philosophies concerning technology (Mamta, 2012; Blut and Wang, 2020). Compelling or favourable views influence their behaviour towards ICTs while the negative or inhibiting beliefs hold them back. It is the compelling or positive beliefs that are necessary for adoption of ICTs. Alshehri (2012)

defines such belief systems as culture. Literature reveals that culture is complex but also that it is possible to develop many different dimensions of it (Ali, Weerakkody and El-Haddadeh, 2009b) which impact digital government initiatives. It is therefore not surprising that there are several definitions, conceptualisations and dimensions used to describe culture (Hofstede, 2011). This strengthens the notion that culture is context specific.

The influence of culture has been investigated by Hofstede (2011) who developed six measurements; uncertainty avoidance, power distance, masculinity/femininity, individualism/collectivism, short term planning as well as indulgence. Although the measurements are widely utilised in examining culture's influence on digital government adoption, they are more reflective of national culture (Ali, Weerakkody and El-Haddadeh, 2009b; Nguyen, 2016) than indigenous culture at individual, society or community level. Sehli et. al. (2016) recognised that societal culture played an important role on digital government adoption. Despite this recognition, they based their model on Hofstede's cultural dimensions as societal cultural dimensions. We argue that groups and societies depicted by Hofstede's seminal work are based on national attributes outlined in the online measures (Hofstede, 2011). From an African perspective, there is hardly empirical study examining indigenous African culture's influence on digital government uptake. Most digital government research conducted in Africa involving the influence of culture was largely based on Hofstede's cultural dimensions (Aida and Majdi, 2014; Hu and Khanam, 2016). Further, Sehli et. al. (2016) also noted that research focusing on indigenous culture and digital government in low-income countries is almost non-existent. This assertion was confirmed by Al-Hujran et. al. (2011). Bwalya (2009a) attempted to investigate the impact of government commitment, awareness, language content and trust and conceptually concluded that such constructs were necessary for successful digital government initiatives in low-income countries. Alsaif (2013) also investigated the influence of similar constructs in Saudi Arabia..

3.4 Internet Access

Besides indigenous African culture, this study also investigates extant influence of internet access on digital government uptake in Zambia. ICT usage in Zambia is considered low or rudimentary among SMEs (Hook, 2016) despite an increase in broadband services in Africa (Narayan, 2014). The enabling infrastructure for Internet access used by SMEs includes dial up connections, Integrated Services Digital Networks (ISDN), Digital Subscriber Lines (DSL), Satellite connections, cable modems, Wireless Local Area Networks (WLAN), Wi-Fi (a

trademarked term for IEEE 802.11x standard) and Worldwide Interoperability for Microwave Access (WiMAX) based on IEEE 802.16 standard. The precursors to access or use of the internet are readiness, availability, accessibility and uptake (Bwalya and Healy, 2010). Readiness depicts the preparedness to deploy, adopt and use ICT initiatives (Ismail, 2008). Existing policies and infrastructure provide enabling conditions that encourage ICT initiatives which target developmental needs. Some of the positive policies implemented in Zambia by Mobile Network Operators (Zamtel, Airtel and MTN) included a reduction in the cost of data bundles by nearly 70% at the end of 2017. Through the universal access project, the regulator of telecommunication companies installed telecommunication towers across the country. These efforts were aimed at preparing and enhancing the technical environment for the provision of the internet service, which is a critical factor for enabling effective government service uptake by citizens and businesses (especially SMEs whose role in national development is key).

Availability is the existence of internet to citizens and businesses in low-income countries while accessibility is defined in the context of affordability. The uptake parameter describes ways that simplify the application of ICT initiatives in a useful manner that contributes to the satisfaction of the needs of citizens and businesses. Uptake is based on the knowledge that using the proposed technologies to address a specific need would reduce the required effort (E) to achieve the objective while at the same time increasing the users' performance (P); $(P) = k \frac{1}{E}$, where k is a moderating or mediating coefficient.

In low-income countries, internet access is a bottleneck to Digital Government adoption. A reliable as well as affordable internet service is key for technology adoption (Agbemenu and Marfo, 2016). As indicated earlier, the government policies implemented in Zambia are expected to increase access to the internet thereby influencing intention to adopt digital platforms offered by government. This research examines extant impact of internet access following positive policies by the Zambian government.

3.5 Efficiency Summary

The introduction of technology in government sparked an evolution from a manually driven government to a digitally driven government, guided by appropriate maturity models and standards. Digital government systems, designed and implemented with the aim of improving provision of public services suffer several adoption challenges (Kamal and Qureshi, 2009). Amongst these challenges, culture exhibits a complex facet arising from its multi-dimensional

contexts. This research therefore argues for investigations of influence of culture to be conducted in local contexts. Firstly, the local or indigenous culture should be understood prior to investigating its influence on digital government.

In order to investigate indigenous culture influence from an African context, this study made use of two digital government services; e-filing as well as e-payment. E-filing service has a far reaching influence on economic development (Kumar, 2017; Syed, Henderson and Gupta, 2017). E-services increase intra-government efficiency, improve delivery of public services, support transparency and open-government (Haldenwang, 2004). Considerable research has been undertaken to investigate digital government uptake using e-filing (Azmi, Kamarulzaman and Hamid, 2012b; Chandra, 2015; Gupta, Udo, *et al.*, 2015; Mustapha, Normala and Sheikh, 2015; Syed, Henderson and Gupta, 2017). The low e-services usage in Zambia and generally in Africa agrees with United Nations survey (UNDESA, 2016, 2018) where the results show that Africa has consistently trailed as shown in **Table 3.3**.

3.6 Conclusion

This chapter discussed digital government and reviewed digital government literature involving culture. The effect of culture on digital government adoption was also highlighted.

The implementation of information systems is an anchor to transformation of governments from digitalisation stage through digital government to smart governments. The progression through these stages can only be realised by ensuring that the fundamental digital government standards necessary for collaboration are adhered to, coupled with periodic maturity assessments to ascertain conformity to preselected digital government models.

The review also highlighted that the attainment of an appropriate digital government architecture depended on factors such as political will, financial, technological and culture. While political will, financial and technological factors are relatively well understood, culture expresses itself in different dimensions and is context specific. Understanding these context specific dimensions of culture is important for digital government adoption, especially in low-income countries, where indigenous culture is rooted in societies and communities.

Further, literature revealed that many scholars investigated the effect of culture on digital government uptake or adoption. They however investigated culture from the context of prescribed cultural dimensions such as organisational, administrative and national culture

largely using Hofstede's measurements. Research investigating indigenous culture's influence, especially in an African context, on digital government adoption is nearly non-existent.

Chapter 3 seeks to systematically bring to the fore the extent to which literature identifies indigenous African culture as a factor in digital government adoption.

CHAPTER 4

4. A SYSTEMATIC LITERATURE REVIEW OF THE INFLUENCE OF INDIGENOUS AFRICAN CULTURE ON DIGITAL GOVERNMENT ADOPTION

4.1 Introduction

Chapter 3 highlighted gaps concerning digital government and culture. Chapter 4 identifies gaps, challenges as well as opportunities for research into the influence of indigenous African culture on digital government adoption. Specifically, the chapter sought to answer the following secondary research questions:

RQ1: What indigenous cultural constructs influence digital government adoption in Africa?

RQ2: Which dimensions and contexts shape the direction of digital government research involving culture?

The methodology for the systematic review is outlined in Section 4.2.

4.2 Methodology

The systematic review was centred on the methodology by Kitchenham and Charters (2007), which follows a three stage process: planning, conducting actual review as well as reporting. Reporting approach adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (Harris *et al.*, 2014). The review considered publications written in English covering both digital government and culture from 2000 to 2018. The process of selecting articles was done from January 2019 to July 2019, while the analysis of the articles was from August 2019 to January 2020. A schematic representation of the review protocol based on PRISMA is presented in **Figure 4.1**.

The stages of the review protocol are outlined in subsequent sub sections.

4.2.1 Planning the Review

The planning of the review constituted three aspects; development of the search terms, identification of the relevant data sources and the inclusion and exclusion criteria.

4.2.1.1 Development of search terms

The development of the search terms was derived from RQ1 and RQ2. The framework for the development of the search strings presented in Appendix V is shown below;

[Unit of Analysis] AND [Technology artefact] AND [Phenomenon of Interest].

The specific terms for the [Unit of Analysis] are:

- Local culture OR
- African culture OR
- Indigenous culture OR
- Indigenous African Culture

The specific terms for the [Technology artefact] are:

- E-government OR
- E-gov OR
- Digital government OR
- E-governance OR
- Electronic Government OR
- Egovernment OR
- E government

The specific terms for the [Phenomenon of Interest] are:

- Acceptance
- Usage
- Adoption

4.2.1.2 Identification of the relevant data sources

The search was done using the identified ten electronic multidisciplinary databases as shown in **Table 4.1**.

Table 4.1: Electronic Databases

Journals searched (2000–2018)

Taylor & Francis Online

Association for Information Systems electronic Library (AISEL),

African Journal of Information Systems (AJIS),

Scopus,

IEEE Xplore,

Association for Computing Machinery (ACM),

ScienceDirect,

African digital repository,

Springer,

Google Scholar

4.2.1.3 The inclusion and exclusion criteria

Articles were selected based on their relevance using the following criteria;

4.2.1.3.1 Inclusion

- Articles published between 2000 and 2018
- Articles published in English
- Articles containing both Digital government and culture

4.2.1.3.2 Exclusion

- Articles published before 2000
- Articles published in other languages
- Articles containing Digital government only
- Articles containing culture only
- Duplicate articles
- Articles without year of publication
- Articles without theoretical grounding

The actual conduct of the systematic review is explained in Section 4.2.

4.2.2 Review Conduct

The initial course of choosing the applicable literature encompassed reading of title, abstracts and keywords to ensure they met the specified protocol. Publications focussing on digital government implementation or singularly focusing on culture were excluded. The initial search using the framework in Appendix I resulted in 511,363 articles.

On the surface, there appears to be much research concerning digital government and culture. However, a detailed review showed that only 33 articles met set conditions. These included those publications that were extracted from the reference lists of the scanned articles, initially aimed at identifying additional articles omitted during initial search. Articles were carefully read to identify important cultural constructs with potential to influence digital government adoption. Results of systematic review are presented in a PRISMA Flowchart in **Figure 4.1**.

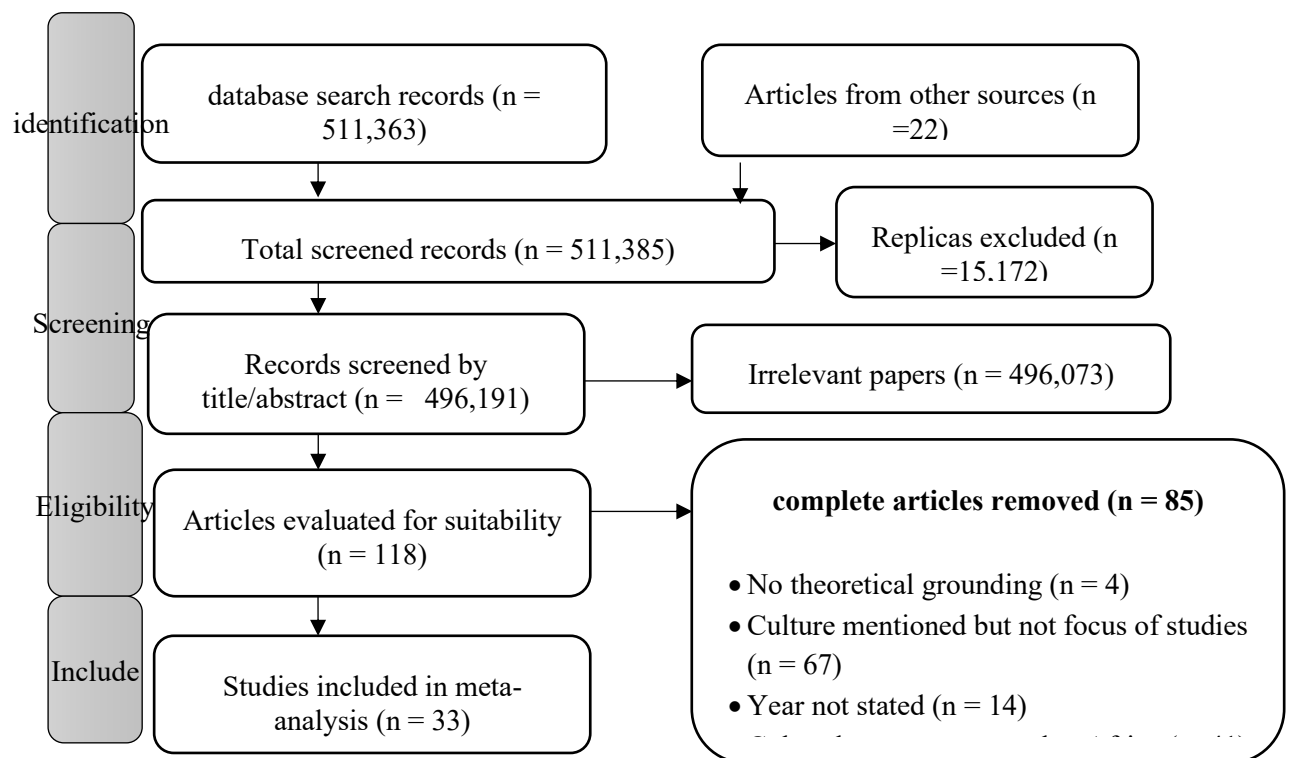


Figure 4.1: Studies screened using the PRISMA Flowchart.

4.3 Classification and coding

The articles reviewed were coded according to an adapted classification framework developed by Amui, Jabbour, de Sousa and Kannan (2017). The articles were classified using number and letter codes.

Table 4.2: classification and codes

Classification	Description	Codes
Context	Africa	1A
	Outside Africa	1B
Digital government perspective or focus	G2C	2A
	G2B	2B
	G2E	2C
	G2G	2D
Cultural Dimension	Indigenous	4A
	Professional	4B
	Generic	4C
	Community/Societal	4D
	Organisational/administrative	4E
	National	4F

4.4 Main findings

Table 4.3 shows a summary of digital government studies involving culture. Out of 33 publications that discussed digital government and culture, only fifteen (15) discussed digital government and culture in an African context.

Table 4.3: Summary of previous studies involving culture and digital government

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
1	(Choudrie <i>et al.</i> , 2017)	Culture (a single view)	Case Study, interviews & observations	Nigeria	Government Information Quarterly (GIQ)/ ScienceDirect	G2E	Choudrie et al. (2017) carried out a qualitative research on influence of religious practices as well as ethnicity in public- sector environment..
2	(Schuppan , 2009)	neopatrimonial administrative culture, African culture, authoritarian administrative culture,	Case study	sub-Saharan Africa	GIQ/ ELSEVIER	G2G, G2B, G2C	The study highlighted cultural constructs such as rent seeking behaviour, clientelism, neo-patrimonialism and even suggested that these were part of African culture. The study however focused more on benefits of three systems implemented in Ghana, Tanzania and Kenya rather than empirically examine the influence of the identified cultural constructs on digital government adoption.
3	(Maumbe, Owei and Alexander , 2008)	culture	Critical approach, Literature Review	South Africa	GIQ/ ScienceDirect	G2C	The paper stirred introspection by low-income states regarding digital government initiatives and underscored the need for local solutions. The paper, which focused on South Africa, further indicated the need for infrastructure. The research concluded by highlighting the need for multicultural approaches, reinforced by development preferences. Again, there are no specific cultural constructs, African or even South African that were examined.

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
4	(Rorissa and Demissie, 2010)	culture	Case study	Africa	GIQ/ ELSEVIER	G2C	The paper highlighted the extant slow ICT adoption in Africa and attributes this to illiteracy, infrastructure, , economy, as well as culture . The paper largely focused on adoption of websites and only considered an abstract view of culture without examining it nor decomposing it into lower level constructs which required examining to decipher the reasons for consistent lagging behind of Africa as illustrated in Table 3.1.
5	(Shemi, 2012)	Organisational culture, Hofstede's cultural dimensions	Interpretive/ Case Studies	Botswana	Thesis	G2B	The research revealed that managerial characteristics, slow Internet skilled ICT personnel, perception, , availability, , cost of installation, Internet applications maintenance, access to payment systems, security concerns, organisational culture , supplier as well as customer preferences, local business environment, including global economic recession had an impact on adoption. The elements identified are void of cultural constructs perceived from an African context.
6	(Greunen and Yeratziotis, 2008)	Polychronic vs. Monochronic, Time Orientation, Individualism vs. Collectivism, Culture Context	Case Study	South Africa	SAICSIT/ ACM	G2C	In a study of culture and government websites, Greunen et. al. (2008) while noting that culture affected digital government, also highlighted the lack of clarity regarding culture in South Africa This quagmire highlighted importance as far as understanding salient cultural constructs that steer intention to use digital government is concerned.

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
7	(Zhao, Shen and Collier, 2014)	Uncertainty Avoidance, Power Distance, In group collectivism, Future Orientation, Performance Orientation	Regression, DOI	55 countries	ACM	G2C	The paper adopted Hofstede's constructs. Although these constructs were shown to be significantly correlated with digital government adoption, they do not represent indigenous culture from an African perspective
8	(Belachew , 2010)	Low level working culture	Case Study	Ethiopia	ACM	G2C	The case study identified several factors including collaboration between Private and Public Sector as key factors for digital government. Although low level working culture is mentioned in the abstract, it is not substantiated in the paper. Further, low level working culture is a consequence of cultural factors whose antecedents need investigating.
9	(Odongo and Rono, 2016)	Ideological differences, Stereotypes, Culture	Literature Review, Survey	Kenya	ACM	G2C	The paper highlighted the existing digital and culture divide in Kenya and recommended strategies of bridging the divide. There are no specific cultural constructs examined or included in the recommended strategies. The study did not examine culture empirically.

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
10	(Yavwa and Twinomur inzi, 2018)	Communalism, Spirituality, Respect	Survey & UTAUT	Zambia	IEEE Xplore	G2C	This paper identified spirituality, communalism and respect as fundamental moderators of digital government adoption in low-income countries especially African countries. However, the paper is conceptual.
11	(Elaswad and Jensen, 2016)	Culture, social culture, societal culture	Case Study	Egypt	IEEE Xplore	G2C	The paper proposed a model for Online Authentication (digital identity management) for digital government services, which aimed at helping North African Countries changeover from traditional systems to secure web based systems. The paper observed that due to illiteracy levels (45%), social culture and societal culture could influence citizens to share their passwords thereby threatening successful adoption of digital government services. In conclusion, the paper underscored the need to attach as much importance to culture as to technological factors
12	(Takavara sha <i>et al.</i> , 2012)	Culture, power distance, collectivism	Qualitative, using interviews	Zimbabwe	IEEE Xplore	G2C	In a study entitled “The influence of culture on e-Leadership in developing countries: Assessing Zimbabwe's capacity gap in the context of e-government”, authors notice other soft inhibitors gaining recognition and yet few studies consider the influence of culture on e-Leadership in spite of its apparent impact on e-strategies like e-government. Authors found culture to have an impact on digital government leadership and suggested digital government evolution embracing e-Leadership in a manner that is culturally amenable. Rather than adopt indigenous dimensions of culture, the study adopted Hofstede’s national cultural perspectives.

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
13	(Choudrie, Umeoji and Forson, 2012)	Power distance, Collectivism, Uncertainty Avoidance, Long term orientation.	Qualitative research, DOI, Case Study	Nigeria	AISeL	G2C	The paper found the Hofstede's cultural perspectives that include power distance uncertainty avoidance, collectivism, and long-term orientation had an impact on digital government diffusion. Again, no indigenous cultural constructs were identified.
14	(Bwalya, 2009a)	Culture Awareness, local language, Usability, Trust	Case Study	Zambia	EJISDC	G2C	The study was conceptual. However, it makes important recommendations regarding the need to incorporate cultural values such as local language and trust into the design frameworks of digital government systems.
15	(Heeks, 2002)	Role culture, power culture, culture	Case Study	Africa; Ghana, SA	IOS Press	G2G, G2B, G2C	The paper showed that digital government played a key role in Africa's development if the cultural orientation was correct. Using Ghana's customs system for a case study, the paper also noted that embedding western culture in digital government designs in Africa prevented diffusion of services.
16	(Evans and Yen, 2005)	Culture, trust, religion,	Exploratory	USA	GIQ/ ScienceDirect	G2G, G2B, G2C	The paper highlighted the potential initial citizen resistance arising from the implementation of digital government, and also highlighted development expenses as inhibiting factors. The paper broadly identified cultural and social adaptation issues, without empirical analysis, as potential inhibitors of digital government..

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
17	(Gallivan and Srite, 2005)	Power Distance / Individualism / collectivism, uncertainty Avoidance, Masculinity / Femininity, orientation short-term v. long-term	social identity theory (SIT)	Not specified	Information and Organization/ ELSEVIER	General	Gallivan & Srite (2005) ,using social identity theory (SIT), contend that there was need to have a holistic view of culture rather than fragmentary perspectives. No empirical results are provided on the holistic view of culture, which takes a national perspective. A holistic view of culture introduces vagueness and hinders IS investigations into multi-dimensional effects of culture on digital government adoption.
18	(Jackson and Wong, 2017)	Hierarchism, Fatalism, Egalitarianism, Individualism	qualitative explanatory case study	Malaysia	Springer	G2E	Jackson & Wong (2017) noted that culture was exhibited across many levels; organizational,group, subgroup as well as individual. However, culture in this study was considered in an abstract or single perspective. The heterogeneity of culture in low-income countries limits its generalisation, requiring analysis of context specific cultural constructs. This study did not cover such cultural constructs.
19	(Williams, Gulati and Yates, 2013)	administrative culture	OLS multiple regression	USA	GIQ/ ELSEVIER	G2C	In their study, Williams, Gulati and Yates (2013) carried out multiple regression analysis of their research which showed that there was greater e-government capability in countries that had an administrative culture of sound governance and policies that advanced the development and diffusion of information and communication technologies. Administrative culture of sound governance and policies is more appropriate for digital government implementation rather than adoption of digital government services.

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
20	(Cyr, Bonanni and ilsever, 2004)	Power Distance, Uncertainty Avoidance, Masculine, Individualism	Survey	USA, Canada, German and Japan	ACM	G2C	In a study entitled “Design and E-loyalty Across Cultures in Electronic Commerce” the authors collected data on site in Canada, U.S., Germany and Japan. The findings showed that all hypotheses received support for cross cultural differences concerning trust, satisfaction, loyalty and design preferences for the local website, but not for the foreign website. These findings support the notion that digital government should be context specific.
21	(Cahlikova, 2014)	Organisational culture	Qualitative methodology	Switzerland	ACM	G2C	Cahlikova (2014) considered the importance of culture amongst others on e-participation in Switzerland. . Again, culture is examined at an organisational level rather than from an indigenous perspective.
22	(Slack and Walton, 2008)	Symbols, control systems, stories, rituals and routines, power structures, organisational structures	Case Study	UK	ACM	G2E	. This study points to the fact that culture needs to be decomposed into granular constructs that depict a value system for individuals in a society or community, thereby supporting the call for investigating digital government in indigenous cultural perspectives.
23	(Li, Qi and Ma, 2007)	Administrative Culture	Regression	China	IEEE	G2C	Li et. al (2007) investigated administrative culture in relation to digital government performance. The results from the canonical correlation analysis suggest that administrative culture is related strongly with performance of digital government. The study concluded that administrative culture was one of the most notable factors

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
							influencing digital government result. However, administrative culture is more relevant when measuring implementation than adoption.
24	(Mohamadi and Ranjbaran, 2013)	Culture	Survey	Iran	IEEE	G2C	Mohamadi and Ranjbaran (2013) showed that factors such as security and culture of application of systems were found to be key and vital, though unfortunately, they had not been given enough attention in Iran. This study also speaks to the superficial nature of most digital government studies involving culture.
25	(Akkaya, Wolf and Krcmar, 2012)	National culture	descriptive and causal research approach	Germany	IEEE	G2C	In this study, perceived risk as well as absence of trust of the Internet and government were confirmed to be inhibitors of digital government adoption. Again, this study focused on national dimensions of culture rather than indigenous forms of culture.
26	(Alharbi, Papadaki and Dowland, 2014)	Culture	Survey & UTAUT	Saudi Arabia & UK	Google Scholar	G2C	Alharbi, Papadaki, and Dowland (2014) found that 62.4% of the participants in the study held the position that culture influenced digital government. This study highlights the need to conduct further investigations concerning the influence of culture.
27	(Ali, Weerakody and El-	Power Politics, Risk Perception, Collectivism Vs. Individualism, Masculinity Vs Femininity	Case Study	SRI LANKA and UK		G2E, G2C	The authors explored the effect of national culture by conducting a comparative case study of UK and Sari Lanka. Results showed that differences in culture influenced eGov implementation. Although this study does not bring to the fore indigenous cultural

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
	Haddadeh, 2009b)				Google Scholar		dimensions, it does underscore the effect that cultural differences have on digital government.
28	(Liu <i>et al.</i> , 2007)	Culture	Quantitative analysis/ regression analysis	China	IEEE	G2C	The paper analyses the influencing factors on access to Chinese provincial overnment portals. Culture is identified as one of the factors. However, its form and dimensions remain opaque.
29	(Daqing, 2010)	Organisational commitment, group culture, Organisational developmental culture	Survey	China	IEEE	G2B	The research which investigated E-government adoption using institutional theoryfrom a Chinese perspective revealed that group and organizational culture, as well as coercive pressure influence information systems adoption. No indigenous cultural constructs were identified.
30	(Anza, Sensus and Ramadhan , 2017)	Organisational culture	Meta-Synthesis	Indonesia	IEEE	G2G	In this study, Anza et. al. identified organisation culture as a factor. As stated earlier, this study did not discuss indigenous aspects of culture.
31	(Mingqian g, 2010)	executive ability culture	Meta-Synthesis	China	IEEE	G2G	In a paper entitled “The Analysis of Executive Ability Culture Construction in E-government”, Mingqiang and Qiyong concluded that promoting executive ability

No.	Author /Year	Cultural dimensions	Research Approach	Location	Publication/ Database	Digital government perspective	Relevant Research Findings and critique
							culture construction was a more effective method to improving digital government efficiency. This study is void of indigenous cultural constructs.
32	(Navarrete , 2010)	Trust (based on cultural context)	Survey	USA, Mexico	IEEE	G2C	In this study, Celene Navarrete investigated variations with reference to public services trust as well as consumption by citizens amidst two cultural backgrounds: México as well as United States. The results showed that trust influenced US citizens only. This result is significant as it highlights the existence of context specific cultural dimensions.
33	(AL-Shehry <i>et al.</i> , 2006)	Culture, indigenous Saudi Arabian culture, religion	Case Studies	Kingdom of Saudi Arabia	Google Scholar	G2C	This paper investigated motivations behind the transformation to digital government systems using empirical situational research from Saudi Arabia. Authors concluded that there was no common digital government model that could be applied in all regions largely because of differences in economic, political, cultural and social systems, and pointed to their potential impact on digital government adoption. The research also highlighted the impact of indigenous Saudi Arabian culture on digital government adoption and therefore provides avenues to investigate the influence of indigenous culture in other contexts.

4.5 Analysis and discussion of findings

Table 4.3 above presents a summary of thirty-three research articles considered for further analysis. The codified framework applied in the analysis is presented in Appendix VI while categories of culture are presented in Appendix VII.

4.5.1 Cultural Dimensions

The findings reveal the diversity in which the influence of culture has been examined in digital government research. The results also show that most digital government research that examined the influence of culture took either a generic, organisational perspective or a national cultural dimension. **Table 4.4** shows that 8 articles, representing 24%, considered culture generically without due consideration of its antecedents. 8 articles, representing 24%, took a national perspective of culture. 6 articles, representing 18%, investigated the effect of either organisational or administrative culture on digital government. Only 1 article, representing 3%, attempted to investigate culture from an indigenous context, albeit in a pilot study. 10 articles, representing 30%, focused on multiple dimensions of culture. Of these, three only discussed aspects of indigenous culture without empirically examining its constructs (AL-Shehry *et al.*, 2006; Slack and Walton, 2008; Bwalya, 2009b). None of the articles reviewed investigated the influence of professional culture.

Table 4.4: Cultural dimensions in digital government research

Cultural dimensions	Code	No. of Articles
Indigenous	4A	1
Professional	4B	0
Generic	4C	8
Community	4D	0
Organisational/administrative	4E	6
National	4F	8

Combinations	4C + 4E	1
	4E + 4F	1
	4C + 4F	4
	4C + 4D	1
	4A + 4C	1
	4A + 4C + 4F	1
	4A + 4E + 4F	1

The finding indicates the lack of research that investigates the local or context specific factors that affect digital government adoption, usage or acceptance. The findings in **Table 4.4** provide answers to the question, “*What indigenous cultural constructs influence digital government adoption in Africa?*”. The table also shows that there is hardly research focusing on indigenous African culture’s influence on digital government. However, Yavwa and Twinomurinzi (2018) considered indigenous African cultural constructs in form of spirituality, African communalism as well as respect for authority and elders in a conceptual paper.

4.5.2 Research Context

Table 4.5 shows that 15 articles, representing 45%, are from within Africa. 17 articles, representing 52%, are from outside Africa. 1 article, representing 3%, considered cross cultural research covering several countries.

Table 4.5: Digital government research contexts

Research Context	Code	No. of articles
Research conducted in Africa	1A	15

Research conducted outside Africa	1B	17
Cross cultural Research	1A, B	1

Table 4.5 shows fifteen research articles pointing to culture as significant influencer of digital government usage or acceptance in Africa. This review considers this an important finding because only 16.72% of world's population is in Africa yet 50% of research into digital government has indicated that culture plays a role. This finding further supports the need for investigating the impact of indigenous African culture, particularly three cultural constructs; spirituality, African communalism and respect for elders and authority (Mbiti, 1969; Namafe, 2006; Ezenweke and Nwadiolor, 2013; Etta, Esowe and Asukwo, 2016; Táíwò, 2016; Yavwa and Twinomurinzi, 2018).

4.5.3 Digital government perspectives

Table 4.6 shows that most digital government research conducted is aligned to the Government to Citizens domain. The results show that nearly 76% of the articles reviewed were citizen centric. 2 articles, representing 6%, examined the Government to Business. 3 articles, representing 9.1%, were focused on the Government to Employee. 2 articles, representing 6%, were focused on Government to Government. 4 articles were focused on multiple dimensions, while 1 article was generic.

Table 4.6: Digital government research perspectives or focus

Digital government perspectives	Code	No. of articles
Government2Citizens (G2C)	2A	23
Government2Business (G2B)	2B	2
Government2Employee (G2E)	2C	3
Government2Government (G2G)	2D	2

G2C + G2E	2A + 2C	1
G2C + G2B + G2G	2A + 2B + 2D	3
Generic	Generic	1

The finding that the research has mainly been centered on G2C indicates how an individual level (including SMEs) influence, placed alongside the claim that culture in Africa has an influence (Section 6.2), further supports the finding that indigenous African culture at an individual level has an influence on digital government. There is however a gap and opportunity for research into how this influence plays out at the organizational (G2B, G2G and G2E) level.

4.6 Conclusions

The systematic review sought to identify the gaps, challenges and opportunities for research into the influence of indigenous African culture on digital government adoption. The findings reveal an absence of research focusing on indigenous cultural dimensions. The existing research has been largely shaped around generic, national and organisational culture with a focus on the government to citizen relationship. There is therefore a significant gap in understanding the effects of various dimensions of indigenous culture on digital government adoption. There are challenges with digital government adoption in Africa, which presents an opportunity for further research.

Chapter 5 particularly provides further insights into three indigenous cultural constructs.

CHAPTER 5

5. INDIGENOUS AFRICAN CULTURE: SPIRITUALITY, COMMUNALISM AND RESPECT

Chapters 1-4 focused on problem definition, provided the context of this study, provided literature on digital government, internet access and culture, and also through a systematic review, highlighted extant gaps on cultural dimensions affecting the adoption of digital government in an African context. This chapter amplifies dimensions indigenous to African culture which include spirituality, communalism and respect for authority and elders.

5.1 Introduction

Chapter 3 revealed that culture is multi-dimensional and context specific. Contextualised cultural dimensions that form the core of indigenous African culture were brought to the fore.

This chapter discusses the three key indigenous African cultural constructs; *spirituality*, *communalism* and *respect for elders and authority*. These constructs highlight the lived reality of the African people and bring to the surface their perceived effect on the development of digital government in African societies.

5.2 Spirituality

Spirituality defines the essence of humanity. There is a close relationship between spirituality and religion (Ali, Weerakkody and El-Haddadeh, 2009b) inherited beliefs as well as superstition (Omobola, 2013). Spirituality dictates one's behaviour in society and provides boundary conditions for such behaviour. It can take a specific context such as spiritual health, spiritual intelligence or spiritual self-consciousness (Giacalone and Jurkiewicz, 2003). Spiritual self-consciousness, which focuses on personal spirituality, is considered for its moderating and mediating influence on the adoption of digital government. Personal spirituality allows an individual to have a sense of the sacred without necessarily having the institutional practices and limitations that are associated with religion.

5.2.1 Spirituality Defined

Spirituality is defined as a belief in unseen forces that govern over existence and being (Principe, 1983). The terms 'spirituality' and 'religion' are usually seen as complementary and are used interchangeably, yet they have some important distinctions (Oman, 2013). Spirituality

is differentiated from religion, religion being the response of individuals to a belief in an unseen force (Principe, 1983; Bregman, 2004). Spirituality therefore has both cultural and social framings that determine the attitudes, beliefs and practices that influence individuals' lives (Gumo *et al.*, 2012). From the African context, deeper values, attitudes, beliefs and practices are articulated and shaped by African contexts.

Spirituality is a universal concept that represents experiences, attitudes, memories and a mysterious consciousness of the connection between different realities (Hoogen, 2014). Spirituality has also been defined as being a cultural spirit, communicating fundamental tenets exhibited by that culture (Cilliers, 2009). Scholars advocate the inclusion of the sacred or transcendent as part of spirituality when the influence of spirituality is investigated (Swart, 2017). Tanyi (2002) describes spirituality as comprising religion combined with indigenous beliefs and values. Spirituality, when seen as part of culture (Hoogen, 2014), includes one's recognition of extant inward feelings as well as beliefs, that offer purpose, direction and worthiness to life (Fisher, 2011). Individuals express these feelings and beliefs through religious values, rituals, ceremonies and traditional practices (Tanyi, 2002), which serve as an embodiment of their identity.

5.2.2 The Importance of Spirituality

Many scholars who have investigated effect of culture on digital government (Gallivan and Srite, 2005; Weerakkody, Dwivedi and Kurunananda, 2009; Choudrie *et al.*, 2017) examined culture based on Hofstede's (1980) national cultural dimensions (Nadi, 2012a). These studies overlook the lived reality of indigenous culture and the associated values and belief systems such as the spirituality of individuals in a given society or region (Schein, 1984; Leung *et al.*, 2005). For example, attention is being drawn to spirituality and its influence on other disciplines, such as healthcare (Hovland, Niederriter and Thoman, 2018; Mesquita *et al.*, 2018; Nahardani *et al.*, 2019) and management (Mishra and Varma, 2019). In this section, the attention is placed on the indigenous values and belief systems that define spirituality in African local contexts and their impact on digital government adoption.

The influence of African spirituality on everyday work practices is best described in the following quote: "*Wherever the African is, there is his religion: he carries it to the fields where he is sowing seeds or harvesting a new crop; he takes it with him to the beer party or to attend a funeral ceremony; and if he is educated, he takes religion with him to the examination room*

at school or in the university; if he is a politician, he takes it to the house of parliament” (Mbiti, 1969). For example, the Zambian (African) adage, “*Vula kasendekela musha mutondo, mutu anamonomo*”, literally meaning, “*if the rain gets heavy under a tree, then it has sensed the presence of a human being*”, depicts a belief system rooted in African spirituality, where a person who experiences unexplained realities attributes them to superstition. The lived realities of spirituality have the potential to influence behaviour towards or against acceptance of modern technologies like digital government.

5.2.3 The How of Spirituality

As outlined in Section 4.2.2, spirituality is embedded in belief systems practised by individuals in African communities. In order to measure its influence, attributes of spirituality were identified. The following attributes of spirituality as a construct (Tanyi, 2002; Kadar *et al.*, 2015) were investigated in the study:

- Turning to ancestral practices to deal with situations that are not understood.
- Turning to God for answers to challenging situations.
- Pursuing interests that are beyond self.
- Understanding importance of one’s deeds.
- Cultivating holistic inter-personal relationships.

The study hypothesised that such attributes have the potential to influence digital government adoption.

5.3 Communalism

Communalism involves integration of shared possession as well as amalgamations of extremely localized sovereign communities (Etta, Esowe and Asukwo, 2016). The basis of the federation being common traditions, values, practices and social structures. In this configuration, individuals constitute the socio-political environment which promotes strong allegiance to socially constituted clique to which one belongs based on sharing history and cultures characterized by collective cooperation.

Communalism can also be viewed as a universal philosophy. The aphorism “*a minute fire is soon quenched*” from the East emphasizes a sense of community affection. Communalism in the Chinese environment in which individuals contend for facilities, power, social as well as economic acceptance arises from pressures to conform to community norms (Daqing, 2010).

These pressures are either coercive, mimetic or normative. Coercive pressure is either superior coercive pressure, where individuals feel coerced to perform a behaviour influenced by authority or Information System coercive pressure, where individuals are influenced by user satisfaction. In communalism, individuals are also influenced by mimetic pressure arising from a position of uncertainty. Normative pressure stems from a system of rationally ordered rules, norms and customs to which individuals feel obliged to conform, a phenomenon closely associated with society affection (Davison, Ou and Martinsons, 2018). These coercive, mimetic or normative pressures are also expressed in an African context albeit with varying dimensions.

5.3.1 African Communalism Defined

African Communalism is defined as a contextual force that is both an African conceptual framework and a set of cultural practices (Etta, Esowe and Asukwo, 2016) that prioritise the role and function of the collective group over the individual (M'Baye and Ikuenobe, 2007). The aphorisms “it takes a village to raise a child”, “a man outside his clan is like a grasshopper that has its wings plucked”, “Mwafwa mukula mwasalakana muyombo” meaning that when a village headman dies, his nephew or his grandchild inherits the throne so that heritage is passed on to future generations, are all aspects of African communalism with a potential to influence behaviour.

Similarly, the South African aphorism “*Umuntu ngumuntu ngabantu*” meaning “a person is a person through other persons” (Cilliers, 2009) fosters a sense of dependence, which speaks to the concept of communalism. One’s actions are largely influenced by other people. In the notion of Ubuntu, the spirit of African communalism is epitomized (Etta, Esowe and Asukwo, 2016). The community is accorded a higher estimation than the individual. “Man is man not on account of his colour or religion, but because he acts and lives in the community”(Etta, Esowe and Asukwo, 2016). Scholars argue that communalism does not deprive the individual of his rights and interests except when these are at variance with those of the community (Oliver, Ezebui and Ojiakor, 2016). This notion juxtaposes true individualism and strengthens the concept of African communalism, which potentially affects digital government adoption.

African Communalism (Agulanna, 2010) depicts an orientation based on communal life. People congregate in communal places and village shrines for social, political, judicial and religious tutelage. In relatively advanced social settings, individuals share their views, ideas and belief systems using social media. They model their behaviour to society norms, i.e. society

takes on a form of possessor of an individual's beliefs as well as conduct, providing emotional and perceived security. Thereby, the society turns out to be a fountain for one's socio-political identity (Kanu, 2010). African communalism emphasizes community life as a living principle of which the basic ideology is community identity. It is this identity that influences individuals to align themselves with the interests of their own minority, ethnic or social group rather than those of the nation as a whole. The alignment of one's interests gives rise to social cohesion whereby individuals in the society consistently pursue fundamental virtues on the basis of advancing a common or social good. African communalism is also conceptualised as a social structure that pervades traditions, values and practices in African contexts in which every member voluntarily cooperates.

5.3.2 The Importance of African Communalism

As stated earlier, many studies overlook the lived reality of indigenous culture and the associated values and belief systems embedded in indigenous African cultural constructs such as communalism. African communalism has a great influence on its members. Literature reveals that individuals are perceived to sieve, incorporate information received and align their own beliefs accordingly when dealing with issues (Moussaid *et al.*, 2013). The alignment of one's beliefs to those of others or the community strengthens the hypothesis that communalism moderates and mediates an individual's conduct. This research therefore empirically investigates influence of communalism on digital government adoption.

5.3.3 The How of African Communalism

African Communalism was examined for its moderating and mediating effects by considering the following sub constructs:

- One's alignment to communal life
 - Communal interactions or interactions with others encourage me
- Community norms,
 - Sharing community norms and values
- Allegiance to one's own ethnic group rather than to the wider society or nation
 - The community has a great impact on my will to perform an action
 - Community norms and values are part of me.

Scholars have identified merits of African communalism (Etta, Esowe and Asukwo, 2016) as:

- Guaranteeing individual's responsibility within the community
Promoting the ethics of mutual help and of caring for each other
- Promoting community spirit – meaning that the community is esteemed more than an individual
- Enhancing internal security arising from the bond of unity and togetherness
- The whole African society is seen as a living network of relations

African communalism has been viewed as part of the obstacles to Africa's economic success (Etta, Esowe and Asukwo, 2016). "Outsiders" are regarded as enemies. They are not integrated into communities regardless of their contribution to the community. Outsiders therefore seek alternative places where the sense of communalism is not strong.

5.4 Respect for Elders and Authority

The presence of the construct "respect" has been inferred in many research areas. There is hardly a standard meaning respect, thus creating bottlenecks in comprehending its place in digital government. Several explanations or meanings of respect in different fields have been coined, raising speculations about the form and nature of the construct, Respect (Dillon, 2007; Rogers and Ashforth, 2017).

Scholars in different fields differentiate respect from two perspectives; grounded on humanity and on socially valued attributes (Rogers and Ashforth, 2017), which gives rise to two types of respect; "recognition respect" and "appraisal respect." African tradition places emphasis on recognition respect more than appraisal respect (Ezenweke and Nwadiolor, 2013). A person in authority is recognized as being in that position as a result of an act of a superior being. In a similar vein, an elderly person is respected and looked at as a source of wisdom.

Those in authority including chiefs are sometimes referred to as 'owners of power' signifying their leadership role in community (Walsh *et al.*, 2018). This form of Respect for those in authority has the potential to influence behaviour. Mianzi, from the concept of guanxi is a specific Eastern construct referring to respect for authority (Davison, Ou and Martinsons, 2018).

5.4.1 Respect for Authority and Elders in an African Context

Respect denotes the value given to an individual by other individuals (Rogers and Ashforth, 2017). It is a resilient construct in an African cultural perspective (Banda, 2012). Africans are

educated to respect peers, older people as well as authority. Respect for older people, human kind, as well as authority is strongly associated with African and more specifically Zambian culture (Banda, 2012). The manifestation of respect is in the form of salutations as well as address. It is expressed by kneeling down and clapping several times, nodding one's head and mentioning a chain of words as a form of greeting (Banda, 2012). Respect moderates the relationship between people and how they carry out instructions as well as regulations. Respect and the pressure to obey instructions from elders and authority are inextricably linked.

It is hypothesized that respect moderates and mediates one's behavioural intention to perform an action. Respect is termed to be a kingpin cultural construct (Namafe, 2006). In Zambia (Namafe, 2006), Several terms such as thoughtfulness, honour, courtesy, favour, care, support, relationship, mutuality, obedience and being dutybound denote respect. Respect is portrayed as the invigorating principle (Namafe, 2006). It is the invigorating aspects of support, relationship, obedience and being dutybound that give respect influencing attributes.

5.4.2 The Importance of Respect for Elders and Authority

This study seeks to stir theory forward concerning how respect from an indigenous African context moderates and mediates behavior. First, the study lays a basis regarding the meaning of respect from an indigenous African perspective. Second, given multidimensional nature of respect, the study also seeks to develop theory which defines foundations of respect for elders as well as authority. SMEs greatly value respect for elders and authority because it satisfies their specific needs drawn from traditional values and practices (Choudrie, Umeoji and Forson, 2012).

5.4.3 The How of Respect for Elders and Authority

In order to measure the influence of respect for elders and authority, its attributes were identified. The following attributes of respect were therefore investigated for a moderating and mediating influence:

- Respect for authority
 - When the authority requests me to perform an action, I obey
- Respect for elders
 - When the elders request me to perform an action, I obey
- Respect for childhood peers

- When my peers request me to perform an action, I obey
- Respect for fellow human beings
 - When my fellow human beings request me to perform an action, I obey

5.5 Conclusion

This chapter decomposed indigenous African culture into three major constituents namely spirituality, African communalism and respect for elders and authority that illustrate the lived reality of African people. The chapter also provided sub constructs that build up into question items used for the investigation.

The next chapter provides a country perspective in terms of digital government, the existing indigenous culture and the infrastructure that supports internet.

CHAPTER 6

6. THEORETICAL UNDERPINNING

6.1 Introduction

Chapter 5 presented a deeper insight into indigenous African culture and defined its constituents comprising spirituality, African communalism and respect for elders and authority whose impact is being investigated.

This chapter provides background knowledge of the Information Systems theories that build up to Unified Theory of Acceptance and Use of Technologies (UTAUT). UTAUT is used to investigate the influence of African culture and internet access on the adoption of e-Filing, e-payment of taxes and other digital government services in Zambia. UTAUT is a derivative of eight synthesized Information Systems theoretical models (Alawadhi and Morris, 2008; Chen, 2013), which include Theory of Reasoned Action (TRA) (Madden, Ellen and Ajzen, 1992), Theory of Planned Behaviour (TPB) (Ajzen, 1991a; Madden, Ellen and Ajzen, 1992), Technology Acceptance Model (TAM) (Davis, 1986), Motivational Model (MM) (Guiffrida *et al.*, 2013), model Combining the Technology Acceptance Model and Theory of Planned Behaviour (C-TAM-TPB) (Chen, 2013), Diffusion of Innovation (DoI) (Rogers, 2002), Social Cognitive Theory (SCT) (Compeau, Higgins and Huff, 1999) and Model of PC Utilization (MPCU) (Alawadhi and Morris, 2009).

6.2 Theory of Reasoned Action

TRA predicts behavioural intention to perform a specified action such as implement, adopt or use information technologies. It is one of the most fundamental, influential and highly cited (Woosley, 2011) theories of human behaviour. It is anchored on two core constructs; attitude towards behaviour and subjective norm (Henle and Michael, 1956). The theory argues that salient beliefs and perceived social pressures are the reason for one's intention towards a specific behaviour (Otieno *et al.*, 2016). The theory helps individuals and institutions to implement their intentions by overcoming obstacles that inhibit performing the behaviour. The theory positively influences intention. The salient beliefs antecedent to intention are either behavioural or normative (Henle and Michael, 1956; Otieno *et al.*, 2016). Behavioural beliefs are hypothesized to be the underlying influence on attitude to perform a behaviour. On the other hand, normative value systems impact an individual's subjective norm to perform the

behaviour. Information, salient beliefs or cultural norms indirectly influence intentions and in turn behaviour through attitudes and subjective norms as illustrated in **Figure 6.1**.

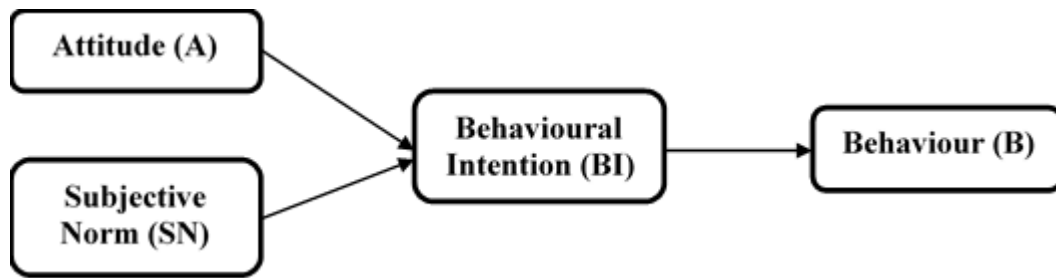


Figure 6.1: Theory of Reasoned Action (Otieno *et al.*, 2016) (BI = A + SN; BI is dependent on A and SN).

Variables external to the model such as culture are assumed to affect intention either through attitude or subjective norms. By measuring attributes of attitude and subjective norm, we can deduce behavioural intention and subsequently behaviour to implement or use a given technology. The explanatory power of TRA with regard to intention is 48% (Madden, Ellen and Ajzen, 1992).

The TRA has three boundary conditions (Otieno *et al.*, 2016) that influence interaction between intentions and behaviour; *a) a high degree of intention results in a positive behaviour towards the intention, b) consistency in intentions from measurement time to execution of behaviour and c) the extent of volitional control of intention by the individual.*

6.3 Theory of Planned Behavior

TPB evolves from TRA. It extends TRA through inclusion of perceived behavioural control. This theory predicts and elucidates human behaviour in precise contexts. Like in the TRA, behavioural intention is the central factor in this theory. Intentions were the key drivers towards the behaviour. By measuring the degree or level of intention, the individual's behaviour to use a technology is predicted, especially if such behaviour is volitionally controlled. The explanatory power of TPB with regard to behavioural intention is between 51% to 59% (Ajzen, 1991b; Madden, Ellen and Ajzen, 1992).

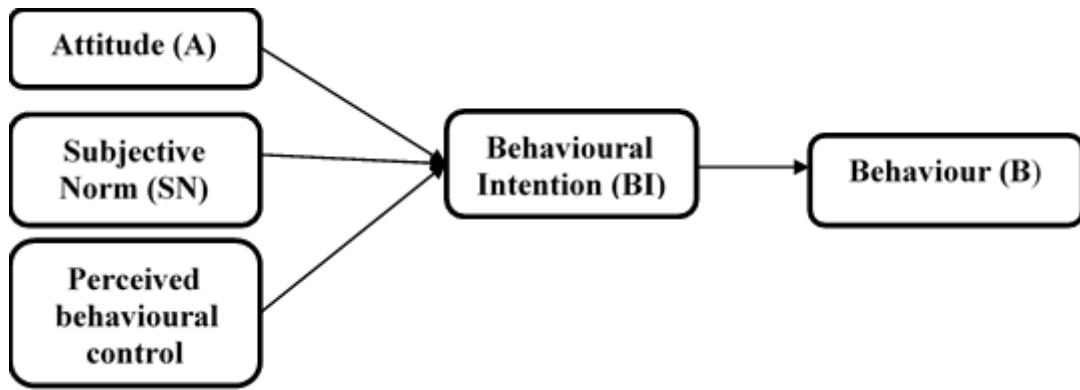


Figure 6.2: Diagrammatic view of Theory of Planned Behaviour (Taylor and Todd, 1995).

Perceived behavioural control determines the extent to which an individual succeeds in performing a behaviour with requisite resources and opportunities at his or her disposal. Perceived behavioural control is thus defined as the opportunities and resources (input into UTAUT as facilitating conditions) available to an individual or institution which determine the probability of behavioural success or achievement. This construct is based on control beliefs.

TPB is further decomposed to add external factors that influence attitude, normative and control beliefs illustrated in **Figure 6.3**. Determinants in this theory are not subjected to moderating variables. Further, the theory does not provide for the influence of cultural dimensions on intention or behaviour. These gaps could limit a comprehensive study of stimulants of digital government services in Zambia thereby depriving decision makers of knowledge that enables them to allocate resources towards activities that support widening of the tax net or generally revenue base.

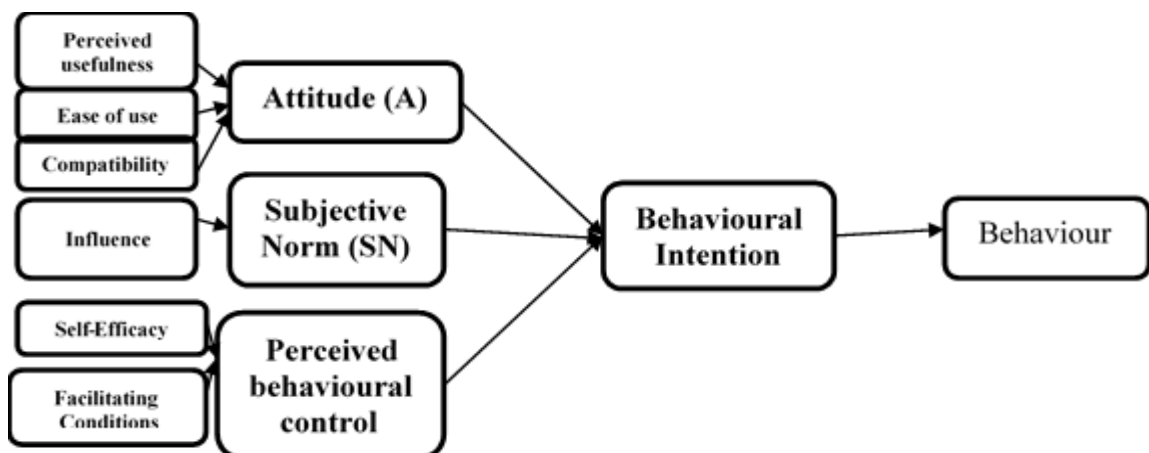


Figure 6.3: Decomposed TPB(Taylor and Todd, 1995).

6.4 Technology Acceptance Model

Unlike the TRA and TPB which are driven by normative beliefs, TAM is driven by the perceived value and simplification of technologies implemented (Surendran, 2012). The perceived value is projected through the perceived usefulness. Simplification of technologies or ICT solutions is exhibited by the perception or experience in terms of ease of use, which portrays the extent of an individual's belief that using technology to achieve an objective is less strenuous. Perceived ease of use has a causal effect on perceived usefulness.

Figure 6.4 presents perceptions of both usefulness as well as ease of use as key determinants of usage through attitude and intention. The easier a system is perceived to be, the higher the likelihood of it being used. Similarly, the more useful a system is perceived to be, the higher is the likelihood of its use (Woosley, 2011). The two constructs are influenced by external variables (stimulus). The impact of external variables on intention and usage in this model is seen to be less influential. The impact is higher on the two key constructs that are antecedents of intention. In short, dominant external stimulants may not necessarily mean strong intention to perform a behaviour. Researchers adopted Hofstede's global cultural dimensions rather than indigenous culture to represent cultural diversity (Hofstede, 2011) in investigating the adoption of various technologies (Abdullah and Khanam, 2016).

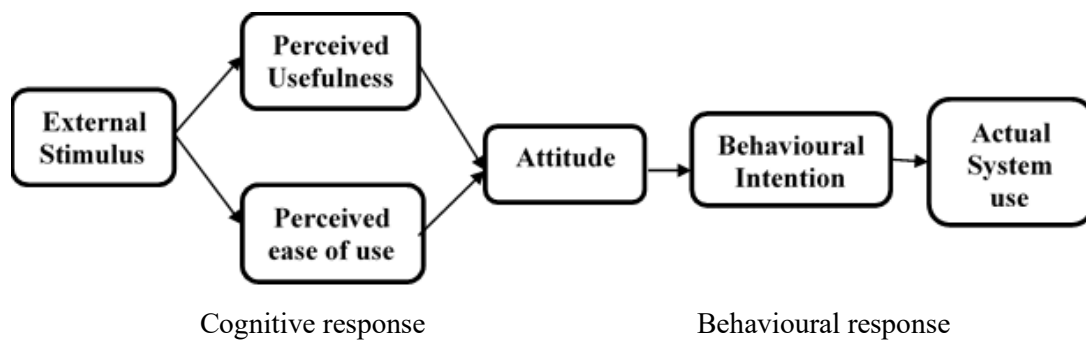


Figure 6.4: Final Path Model for TAM (Chuttur, 2014).

The original path model for TAM by Davis (1993) had attitude towards use as a function of perceived usefulness and perceived ease of use. However, further studies (Taylor and Todd, 1995; Al-mamary *et al.*, 2016) identify behavioural intention as a key determinant of usage (Chuttur, 2014). Little research is carried out using TAM in a mandatory setting. It is largely used in voluntary environments. These limitations led to a revision to TAM referred to as TAM 2, which introduced another construct; the subjective norm. TAM omits key determinants such as facilitating conditions and social influence.

6.4.1 TAM 2

Due to limitations of TAM highlighted in **Table 6.1** in Section 6.11 below, Venkatesh and Davis (Al-mamary *et al.*, 2016) developed TAM 2. One of the limitations is the difficulty in explaining the reasons for a system or technology being perceived as useful. This limitation is overcome by introducing variables that are antecedent to perceived usefulness as shown in **Figure 6.5**. TAM 2 performs well in voluntary and mandatory environments. However, subjective norm only performs well in mandatory settings. It has no effect in voluntary settings. The domain of our research includes voluntary dimensions such as manual submission of returns, which makes the use of this model inappropriate.

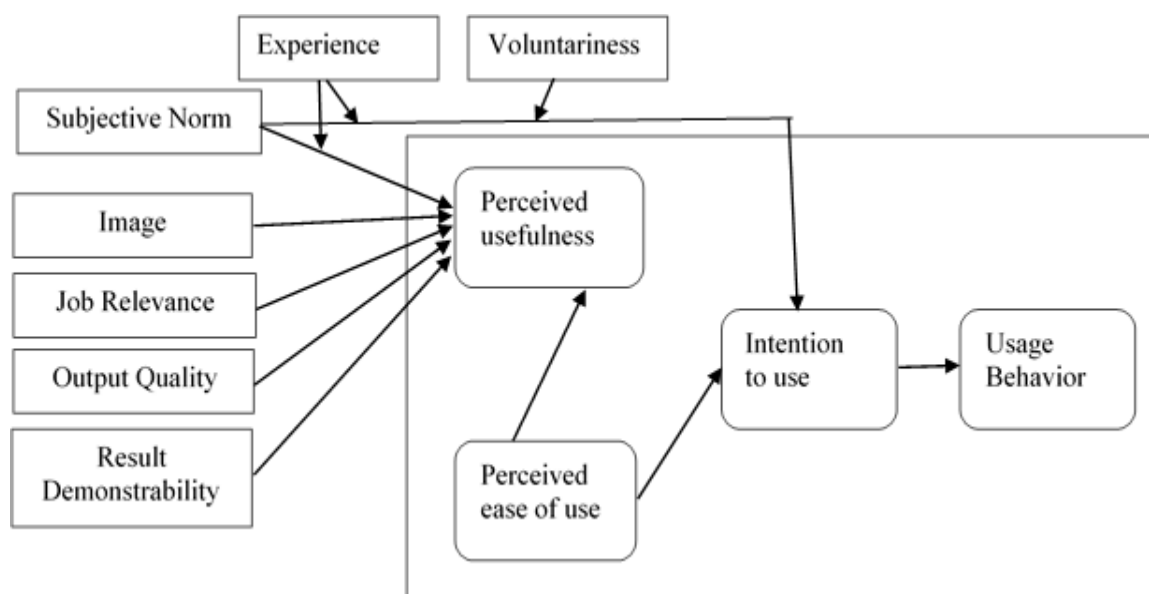


Figure 6.5: Technology Acceptance Model 2 (TAM 2).

Subjective norm impacts positively on both perceived usefulness and intention, moderated by experience and voluntariness. The explanatory power of TAM is 52%.

6.5 Motivational Model

The theory of motivational model has two core constructs; extrinsic motivation and intrinsic motivation. Extrinsic motivation is externally driven. Individuals driven by this form of motivation look for a form of external gain such as pay rise or increased authority for them to accomplish assigned activities (Szalma, 2014). Intrinsic motivation is internally driven. Individuals driven by this form of motivation have no calculated external gains but are merely driven by the pleasure of success.

The Motivational Model, illustrated in **Figure 6.6**, is influenced by external and internal factors. External regulation refers to externally regulated behaviour which is attributed to external forces or possible rewards. Introjected regulation of behaviour is a state whereby an individual complies with regulation without owning the said regulations. Identified regulation is an autonomous form of external motivation which involves one accepting an activity or objective and owning it as an important activity. Integrated regulation occurs when regulations are fully assimilated by an individual and include them in personal activities.

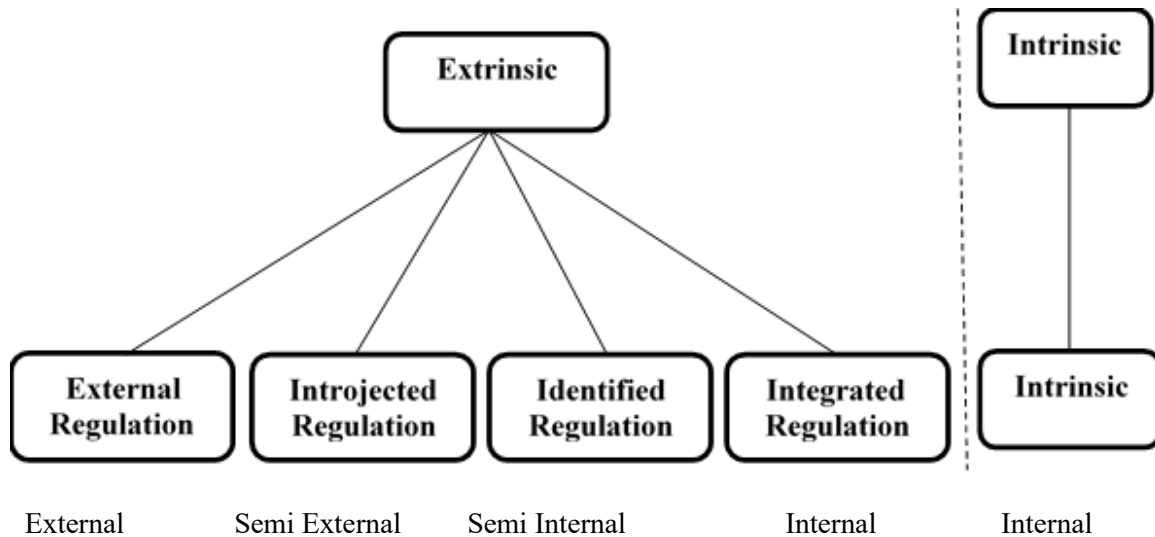


Figure 6.6: Motivational Model (Szalma, 2014).

The downside of this model is the lack of consistency in results over time. Further, the model requires that there be a steady increase in benefits to maintain attractiveness otherwise it will not work. The model also requires a leader to have personal knowledge of each team member. Although *Spirituality* and *Respect* can be considered to be intrinsic motivation variables and communalism, an extrinsic variable, this model is more suited for work place interventions.

6.6 Diffusion of Innovation

Rogers (Rogers, 1995) investigated how the properties of innovations affect their acceptance. Relative advantage, complexity, compatibility and observability account for 49-87% of the differences in acceptance and usage. Added to these attributes are facilitating conditions that precipitate the innovation diffusion process. As reflected in **Figure 6.7**, these include nature of innovation, diffusion channels, environment, the change management process, governance structures supporting the diffusion and type of innovation decisions. Collectively, these positively affect the speed at which diffusion occurs.

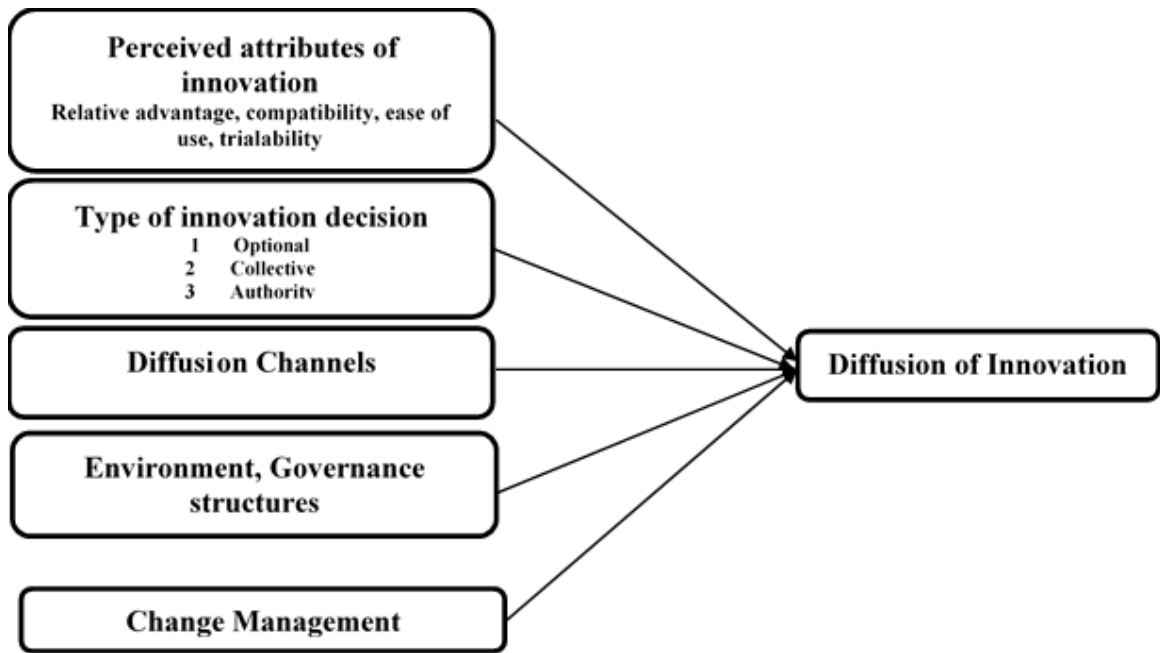


Figure 6.7: Variables determining Diffusion of Innovation(Rogers, 1995).

The focus of this theory is largely tilted towards investigating adoption of technology in institutions rather than by individuals (Al-mamary *et al.*, 2016). The theory ignores other factors that determine product adoption. Further, the theory also has weaknesses in predicting the behaviour of individuals, and has inadequate collective adoption behavioural constructs (Woosley, 2011) which renders this theory inappropriate for this study.

6.7 Social Cognitive Theory

This theory is developed by Bandura to predict human behaviour (Al-mamary *et al.*, 2016). Human behaviour as observed by Bandura takes a cyclic form, influenced by the external environment and cognitive factors as presented in **Figure 6.8**. An individual’s behaviour is therefore a unique function of each of the three factors.

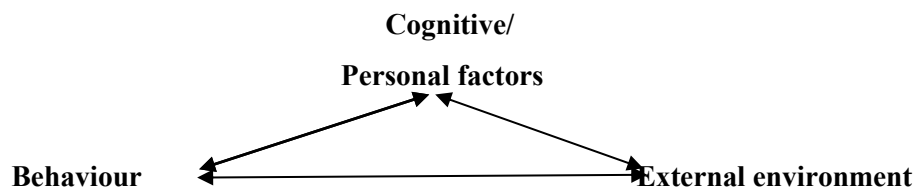


Figure 6.8: Social Cognitive Theory(Wood and Bandura, 1989; Al-mamary *et al.*, 2016).

The theory has five variables; outcome expectations - performance, outcome expectations - personal, self-efficacy, effect and anxiety. Outcome expectation – performance addresses job

related outcomes (Venkatesh , Morris , Davis, 2003). According to (Al-mamary *et al.*, 2016), personal consequences or expectations address one's esteem and feeling of achievement. Self-efficacy is the verdict of an individual's capability to utilize technology to perform an activity (Wood and Bandura, 1989). Effect is a person's inclination towards a behaviour (Venkatesh , Morris , Davis, 2003) and anxiety, the propensity to be fearful or develop phobia towards technologies (Al-mamary *et al.*, 2016). The major drawback of this theory which hinders its use in this study is the lack of unified context. It is broad to the extent that its components are not well understood and integrated.

6.8 Model of PC Utilization

Derived from Triandis (Venkatesh , Morris , Davis, 2003), the theory presents an alternative to TRA as well as TPB. MPCU predicts acceptance and use of technologies much better. However, the six determinants of this model are not designed to predict intention (Samaradiwakara and Gunawardena, 2014). Intention is an important parameter, especially for those individuals in the informal sector that are not yet in the tax net. Knowing stimulants of intention to use digital government services is key for decision makers.

6.9 A Model Combining TAM & TPB

C-TAM-TPB combines attributes and constructs from TAM and TPB to increase its predicting capabilities. It inherits all the advantages and disadvantages of both TAM and TPB. The deficiencies inherited makes this model unsuitable for this study.

6.10 Unified Theory of Acceptance and Use of Technologies

The UTAUT model (**Figure 6.9**) is considered most popular out of all the value expectancy research theories (Woosley, 2011; Abdullah and Khanam, 2016) emanating from its embodiment of the suitable features of eight IS theories. These expectancy value models were subjected to detailed scrutiny (Venkatesh , Morris , Davis, 2003) to identify most dominant and direct constructs responsible for technology adoption. Performance expectancy, effort expectancy, social influence and facilitating conditions are identified as key constructs. This model is designed with flexibility to integrate other variables or constructs to determine their influence on intention or use.

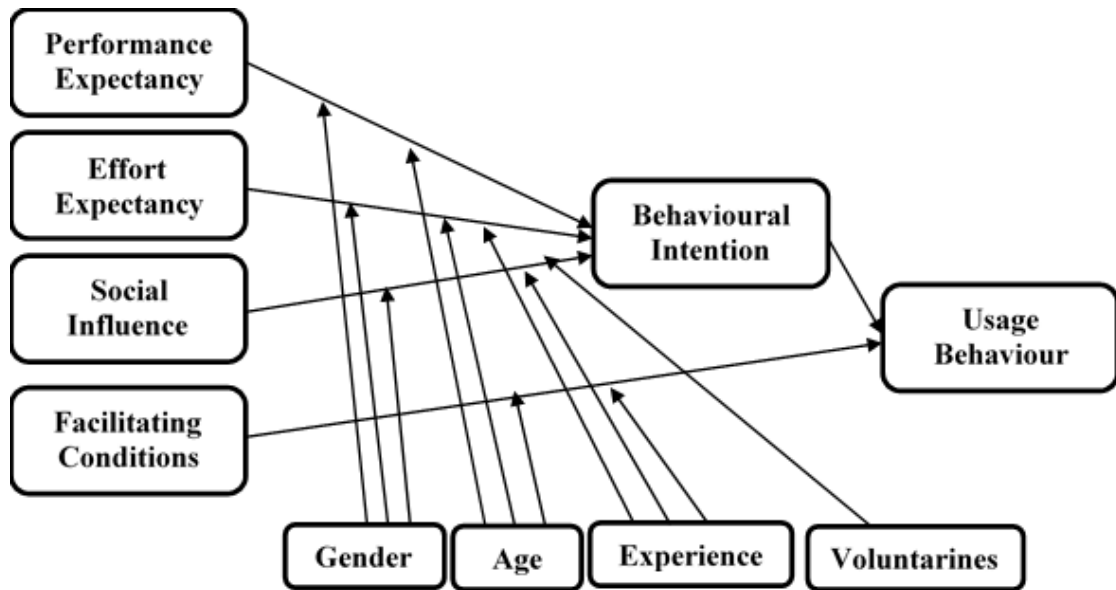


Figure 6.9: The UTAUT Model (Venkatesh , Morris , Davis, 2003).

UTAUT's explanatory power is 70% (Venkatesh , Morris , Davis, 2003) of behavioural intention, the best score in comparative terms, confirming its reliability. Performance expectancy represents degree of acceptance in ability of technology to improve their output. This measure is developed using perceived usefulness from TAM, TAM 2, C-TAM & TPB, extrinsic motivation from MM, Job fit from MPCU, outcome expectancy from SCT and relative advantage from DoI. It is the main predictor of intention (Venkatesh , Morris , Davis, 2003; Woosley, 2011). Effort expectancy represents perceptions that using technology to achieve a task reduces the applied effort. This construct is similar to perceived ease of use from TAM, ease of use from DoI and complexity from MPCU (Woosley, 2011). Social influence is the degree by which one's decision to adopt technology is dominated by other individuals (Venkatesh , Morris , Davis, 2003) who are integral members of the community. It is from this perspective that communalism is hypothesized to moderate the relationship between social influence and intention. As a direct determinant of intention, social influence is developed using subjective norm from TRA, TAM2, TPB, DTPB, C-TAM & TPB, social factors from MPCU and image from DoI (Venkatesh , Morris , Davis, 2003). Facilitating conditions represent the degree to which an individual believes that an organization and technical infrastructure exist to support the use of the system. This construct is developed from perceived behavioural control in TPB, DTPB, C-TAM & TPB, facilitating conditions in MPCU and compatibility from (Venkatesh , Morris , Davis, 2003; Woosley, 2011). In the original UTAUT model presented in

Figure 6.9, the determinants are moderated by gender, age, experience and voluntariness of use. This research seeks to investigate the moderating effect of indigenous African culture (Spirituality, African Communalism and Respect) on social influence.

UTAUT covers both subjective and objective factors. It emphasizes contextual factors (Woosley, 2011) and evolves out of the best features of the eight IS theories making it the most suitable model to apply in this study. It has been widely used to investigate digital government dynamics; implementation and adoption. Further justification is outlined in Section 6.11.

6.11 Limitations of the IS Theories

Table 6.1 outlines the limitations of the IS theories and thus strengthening our choice of the UTAUT model.

Table 6.1: Limitations of the IS Theories.

Theory	Limitation	Source
TRA	<ul style="list-style-type: none"> • It is too general and does not specify belief operative for particular behaviour. • Only used for behaviours under a person's control. • Explains 44% of behavioural intention. 	(Al-mamary <i>et al.</i> , 2016)(Taylor and Todd, 1995)
TAM	<ul style="list-style-type: none"> • Lacks business environment validation. • It is applied more to Office Software than business applications. • Not all factors that influence IT adoption such as organisation dynamics are included in this model. • Depended on self-reporting and equated self-reported usage to actual usage. • Explains 52% of the variance in behavioural intention. • Provides limited guidance. 	(Woosley, 2011) (Asianzu and Maiga, 2012) (Taylor and Todd, 1995)
DoI	<ul style="list-style-type: none"> • Limited constructs to measure adoption behaviour. 	(Woosley, 2011)

Theory	Limitation	Source
	<ul style="list-style-type: none"> The technology under consideration does not influence the outcome since it is not part of the variables. 	
TPB	<ul style="list-style-type: none"> Pure TPB explains only 57 percent of the difference in intention. 	(Taylor and Todd, 1995)
MM	<ul style="list-style-type: none"> Inability to maintain momentum consistently. The need to increase benefits to maintain attractiveness is not practical for our social context. Requires a leader to have personal knowledge of each team member. 	
MPCU	<ul style="list-style-type: none"> Originally designed to predict usage behaviour rather than intention. 	
SCT	<ul style="list-style-type: none"> Not a fully systematized, unified theory; loosely organized. 	
UTAUT 2	<ul style="list-style-type: none"> Specifically designed to cover consumer perspectives in a financial environment such as ecommerce rather than a regulatory environment that digital government is. 	(Venkatesh , Morris , Davis, 2003)

UTAUT provides a better and flexible tool to investigate adoption of e-services.

6.12 Hypotheses Design

Based on the UTAUT model and its constructs, we develop the hypotheses that are used in the model adapted to suit the Zambian social context.

6.12.1 Internet Access

Internet access (IA) is the ability of an individual to connect to the internet using a computer or mobile device to use digital government services. IA is supported by readiness, availability and accessibility of enabling infrastructure. Brahmbhatt Mamta (2012) notes that internet access is one of the major determinants of e-filing adoption. IA influences behavioral intention (BI) towards use of technologies (Patra and Das, 2014). A research carried out by ZICTA,

Zambian Regulator of ICTs, shows that 12.7% of households access internet (ZICTA, 2015) in Zambia. We can thus hypothesize that:

H₁: IA positively affects SMEs' BI to use e-filing and e-payment services in Zambia

6.12.2 Performance Expectancy

We define Performance Expectancy (PE) as the extent of an individual's belief that utilising e-filing and e-payment service increases efficiency, reduces operational costs, and provide control. Tarhini et al.(2016) note that PE strongly predicts of BI to use information systems. Venkatesh , Morris and Davis(2003) demonstrated that PE strongly predicted behavioural intention towards usage of technologies both in involuntary as well as voluntary situations. In addition, Azmi, Kamarulzaman and Hamid (2012a) as well as Ada and Cukai(2014) hypothesized that perceived usefulness, an integral of PE, positively affects e-filing adoption. Therefore, we postulate the following hypothesis:

H₂: PE positively affects SMEs' BI to use e-filing and e-payment services in Zambia

6.12.3 Effort Expectancy

Effort Expectancy (EE) depicts the extent of ease of use of e-filing and e-payment of taxes. This construct is an important determinant of e-filing and e-payment acceptance and usage. There are individuals who have technology phobia. The perception that using e-filing and e-payment services is easy will determine their acceptance and adoption (Alawadhi and Morris, 2008). We thus propose the following hypothesis:

H₃: EE positively affects SMEs' BI to use e-filing as well as e-payment in Zambia

6.12.4 Social Influence

Social Influence (SI) is the extent by which individual's behaviour is influenced by the way in which other individuals or important people view them as a result of having used digital government services such as e-filing and e-payment of taxes (Venkatesh , Morris , Davis, 2003). Their usage behaviour is subject to what others say or do, referred to as subjective norm in other theories or normative social influence, whereby a person's behaviour is influenced by the desire to seek approval or avoid rejection. SI's dimension or scope of influence on BI is

caveated by indigenous African culture. The majority of such individuals constitute SMEs in the informal sector. We can therefore hypothesize the following:

H₄: SI positively affects SMEs' BI to use e-filing and e-payment services in Zambia

H_{4a}: The positive influence of SI on BI to use e-filing and e-payment services is both i) moderated and ii) mediated by 1) spirituality, 2) African communalism, and 3) respect for elders and authority.

6.12.5 Facilitating Conditions

Facilitating conditions (FC) define the extent to which individuals believe that technical infrastructure as well as organizational arrangements exist to reinforce use of e-filing and e-payment (Venkatesh, Morris, Davis, 2003). Many Scholars (Ghalandari, 2012; Alraja, 2016) discovered that facilitating conditions positively influence usage behaviour of technologies. Unlike the previous constructs, FC directly determine technology use. FC include existing infrastructure (connectivity, computers, mobile devices, affordable tariffs, regulations, policies, e-filing and e-payment platforms) that supports technology acceptance. We can thus postulate that:

H_{5a}: FC positively influences usage behaviour of e-filing service

H_{5b}: FC positively influences usage behaviour of e-payment service

6.12.6 Behavioral Intention

Prior studies have shown that BI positively influences usage of both e-payment and e-filing services (Alghamdi, Goodwin and Rampersad, 2011; P. Ada and Cukai, 2014). Some Scholars argue that behavioural intention is the most important determinant of actual behaviour (Alghamdi, Goodwin and Rampersad, 2011). Zhou argues that the most important factor that determines user acceptance and use of technology such as e-filing and e-payment, is the user's intention (Alghamdi, Goodwin and Rampersad, 2011). We can therefore hypothesize that:

H₆: BI positively influences usage behaviour of e-filing service

H₇: BI positively influences usage behaviour of e-payment service

6.12.7 Adoption Model for E-filing and E-payment (AMfEE) Model

The model referred to as AMfEE (Adoption Model for E-filing and E-payment), presented in **Figure 6.10** and **Figure 6.11**, are used to investigate the moderating and mediating influence of culture and internet access on digital government adoption, specifically e-filing and e-payment respectively.

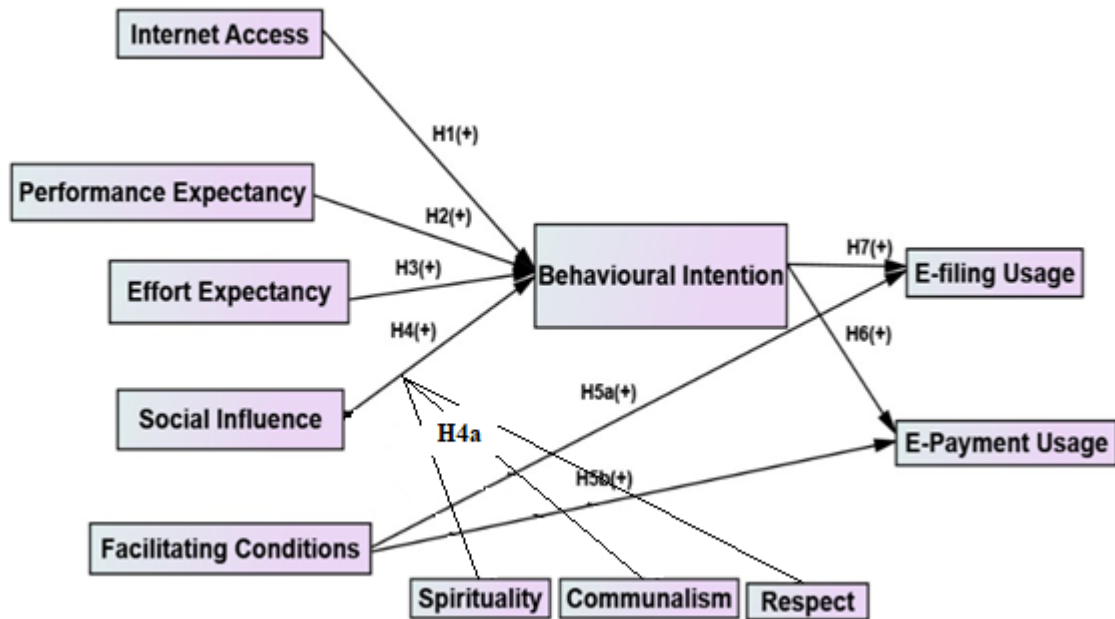


Figure 6.10: Proposed AMfEE Model - Moderation.

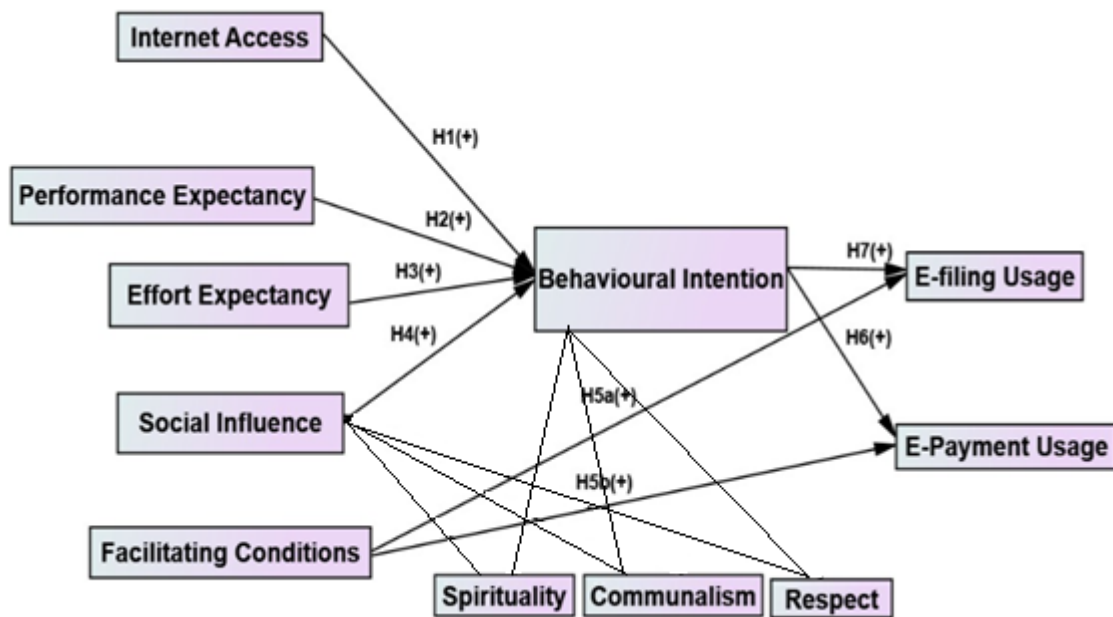


Figure 6.11: Proposed AMfEE Model - Mediation

The digital government adoption model in **Figure 6.10** and **Figure 6.11** are derived from the original UTAUT model. The adaptation of the original model to a context specific model is in line with recommendations made by various authors (Venkatesh *et al.*, 2003)

As already hypothesized, in addition to the impact of Internet Access, Performance Expectancy, Effort Expectancy, and Social Influence on behavioural intention to use digital government, this research is primarily interested in the moderating and mediating effect of cultural variables encompassing spirituality, communalism and respect for elders and authority on the casual relationship between Social Influence and intention.

6.13 Conclusion

Chapter 6 provided theoretical background of the Information Systems adoption theories. The pros and cons of each theory are considered to determine the appropriate theoretical underpinning. UTAUT is found to be a more preferred theory to guide the investigations. Based on UTAUT, the necessary hypotheses are constructed and the adoption model is developed. The next chapter, Chapter 7, defines the research approach based on the Saunders Research Onion Strategy.

CHAPTER 7

7. RESEARCH APPROACH

7.1 Introduction

The study adopted the research onion approach reflected in **Figure 7.1** which was developed by Saunders and Tosey (2012) with the aim of providing a method for research design. As the onion is peeled, each of the five layers are considered and, in each layer, appropriate choices are made.

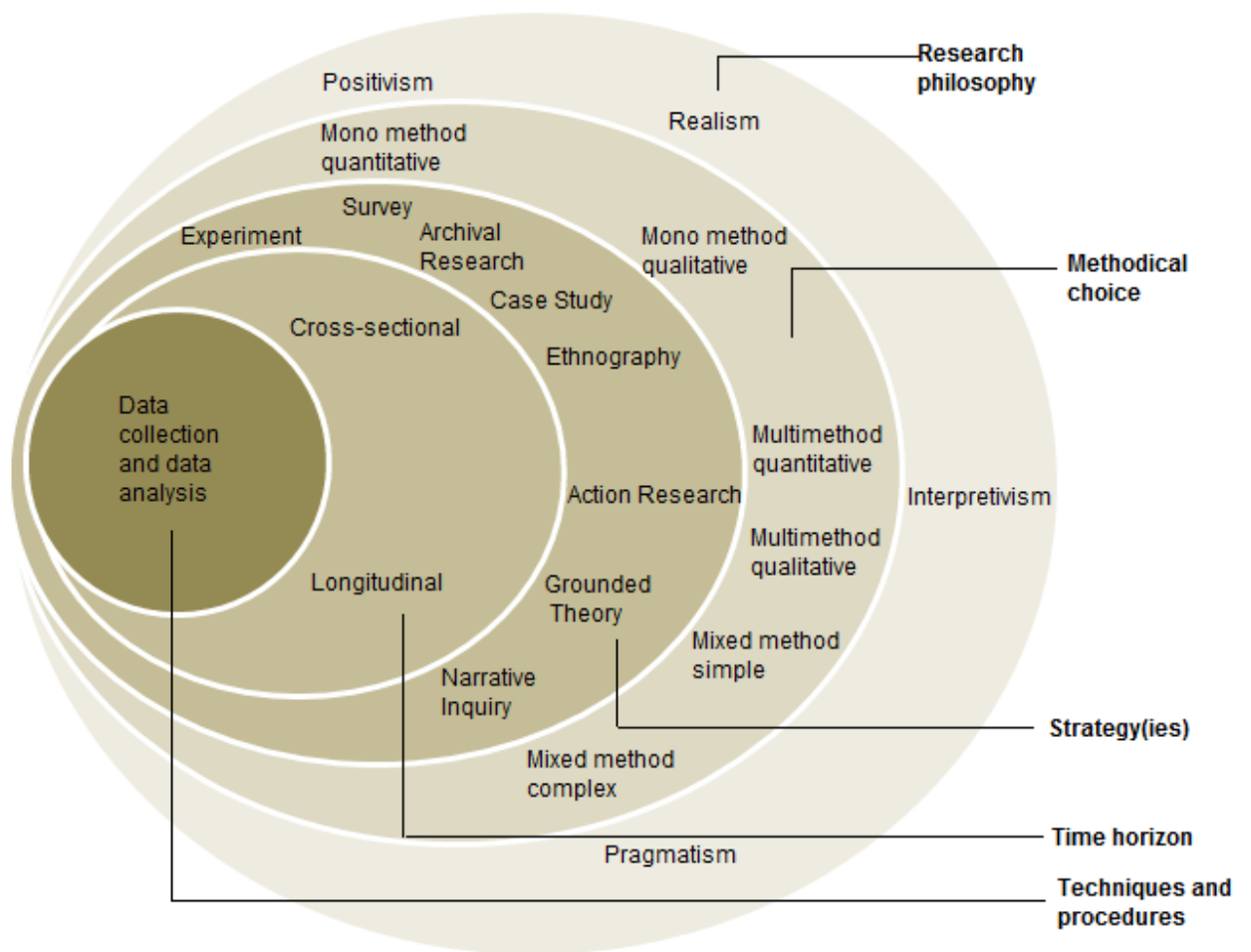


Figure 7.1: Research Onion (Saunders and Tosey, 2012).

7.2 Research Philosophy

Four research philosophies are considered in this study; Positivism, Realism, Interpretivism and Pragmatism.

The realism paradigm is associated with the fact that reality exists. The Researcher perceives this reality based on world views and own experiences. There are two forms of realism; direct realism and critical realism. Direct realism focuses on what is experienced while critical realism goes beyond and considers underlying transcendental complexities. Both forms of realism are inappropriate for this study because they are more relevant for qualitative research.

Interpretivism (Heeks and Bailur, 2007) is associated with the qualitative research approach involving in-depth investigations usually with small samples of data. Interpretivism seeks to understand and interpret the intrinsic nature of human behaviour, making context rich generalisations. Interpretivism adopts a more personal and flexible research structure and avoids rigid structural frameworks as supported by positivism. The research question has boundary conditions caveated by culture, internet access and digital government services. A paradigm that is flexible and avoids structural frameworks would result in collection of unnecessary data.

The pragmatism philosophy is more concerned with the practical consequences of the findings. A pragmatist's view point is that there are multiple realities and not a single reality to any situation.

The positivism paradigm posits that real events are observed empirically and predicted outcomes are explained with logical analysis. Its goal is to make time and law-like generalizations with a clear distinction between reason and feeling (Ahmed and Mansoori, 2017). Positivism is associated with the quantitative research approach in which cause and effect relationships are considered. It uses highly structured and measurable data to test theories (Saunders and Tosey, 2012). In positivism, the researcher's bias and values are not expected to influence the research. To achieve this, large volumes of quantitative data are used to perform statistical hypothesis testing. Positivism philosophy is preferred for this study because it offers independence between the researcher and the research. In addition, positivism is positively aligned to the UTAUT model. Further, the involvement of large volumes of data supports the use of statistical methods which eliminate biasness.

Having considered the four research philosophies, the positivism philosophy is adopted for the reasons stated above.

7.3 Methodology

The selection of a methodology was largely dependent on the type of research being conducted. In general, the research methodologies fall in three categories; quantitative, qualitative and mixed method approaches.

Quantitative research (Kaplan and Duchon, 1988) employs empirical methods and statements to represent and manipulate numerical data to describe a phenomena reflected by given observations. These observations can be captured in many forms. The common quantitative research approaches include survey, correlational, experimental, exploratory, descriptive, or causal-comparative. Quantitative research views reality from an objective standpoint in a value free and unbiased manner. Like the positivism philosophy, the researcher in this approach is independent of the research object. The process is deductive rather than inductive. The generalization based on the research findings provided a foundation to understand and explain the hypotheses.

Qualitative research (Kaplan and Duchon, 1988) is a strategy for systematic collection, organization and interpretation of textual information. It broadly uses inductive approaches to generate novel insights into phenomena that are difficult to measure quantitatively such as social norms which are intangible factors. Other intangible factors include culture specific information about values, opinions, behaviors and social contexts of focused groups. The focused groups, participant observation and in-depth interviews are key data collection techniques. Unlike quantitative research where a form of random sampling mechanism is used, qualitative research uses purposeful sampling (Kaplan and Duchon, 1988) in which the interviewees are carefully selected from those with specific experience in the subject being investigated. While quantitative research assists to test and confirm designed hypotheses, qualitative research through iterative interpretations will greatly help in our study to generate the hypotheses that address the research question. The key elements of this approach are exploration, description and interpretation. **Table 7.1** highlights the key differences between qualitative and quantitative research approaches.

Table 7.1: Comparing Qualitative and Quantitative Methods.

Comparator	Qualitative	Quantitative
Focus	Quality or meaning of experience	Quantity, frequency, magnitude
Philosophical roots	Constructivism, Interpretivism	Positivism
Goals of investigation	Understand, describe, discover	Predict, control, confirm, test

Design characteristics	Flexible, evolving, emergent	Structured, predetermined
Data collection	Researcher as instrument	External instruments; tests, surveys

Mixed methods approach is a methodology for conducting research that involves collecting, analysing and integrating quantitative (e.g., experiments, surveys) and qualitative (e.g., focus groups, interviews) data. It can either take a concurrent or sequential format. In a concurrent mixed methods approach, the study either adopts triangulation or embedded design. Quantitative and qualitative data collection and analyses are carried out concurrently. Using the triangulation method, the outputs of the quantitative and qualitative processes would be mixed and compared to produce a composite model. Triangulation offers different and diverse angles of the problem being investigated. Sequential mixed methods approach includes explanatory, exploratory and sequential embedded designs. In this approach, quantitative and qualitative data collection and analyses are performed exclusively and sequentially. This approach is time consuming. One process needed to be completed before another could commence. The mixed methods approach becomes useful if neither the quantitative nor qualitative approaches are sufficient to undertake the study.

Based on the foregoing, a quantitative methodology which is positivist in nature was adopted and a survey of respondents from a sample size of 450 was conducted. The respondents were randomly selected using systematic sampling with a sampling interval of 633.3 from a sampling frame of small and micro enterprises that are part of the informal sector who are registered for taxes and perform e-filing of tax returns. The sampling frame was made up of 132,354 tax payers. The survey instrument used is a five-point Likert-type scale questionnaire based on “*strongly disagree* (=1)”, “*disagree* (=2)”, “*neutral* (= 3)”, “*agree* (=4)”, and “*strongly agree* (=5)” containing questions to measure factors. The questions to measure culture in a Zambian context were adapted from (Puchalski, 2001; Calma, 2010; Wilson, 2017).

7.4 Strategy

Since the research philosophy adopted is positivist utilising the quantitative methods, a survey strategy was found to be most appropriate.

7.5 Time horizon

Since this research is time bound, the time horizon considered was cross-sectional.

7.6 Data Collection

The initial data collection was carried out during pilot study to aid research design and to assess the reliability of the questionnaire to ensure that it was understood by the respondents. This was followed by full data collection for comprehensive research aimed at validating the moderating and mediating influence of indigenous African culture and internet access on digital government adoption. Data was collected from statistically determined sample of tax paying SMEs in Zambia, who are also users of other digital government services. The instrument for information gathering was a survey using a five-point Likert-type scale questionnaire based on “*strongly disagree* (=1)”, “*disagree* (=2)”, “*neutral* (=3)”, “*agree* (=4)”, and “*strongly agree* (=5)”.

The Agree-Disagree (AD) rating scales are popularly used to analyse information about observed variables which describe underlying constructs. Likert (1932) suggested that the scales be delineated by five points. Dawes (2008), on the other hand, contended that 7-to 10-points scales would yield more information than shorter scales. For instance, a 2- point scale only permits evaluation of the direction of the attitude while a 3- point scale allows for neutrality in addition to direction. In terms of quality of measurement, Revilla, Saris and Krosnick (2014) demonstrated that, on an AD scale, the quality decreases as the number of categories increases. The empirical results obtained by Revilla et.al.(2014) revealed that a 5-point AD scale suggested by Likert provides better data quality than the 7- to 10- points scales. The choice of the AD rating scale was therefore driven by the quality of the data required for this study.

49 responses were rejected because the questionnaires were incomplete. The questionnaires were administered via email, goggle survey and in person distribution by research assistants between October 2018 and November 2019.

7.7 Data Preparation and Analysis

The data preparation and analysis was conducted using SPSS 25.0 and Structural Equation Modelling (SEM) in SPSS AMOS 25.0. SEM has recently become more associated with Information Systems research; providing capabilities to assess both measurement model and path model to test theoretical relationships. Measures included correlation coefficients or path coefficients which indicate the extent to which a given variable influences intention to perform the action. Co-variances were used to indicate how variables relate to each other. Squared

Multiple Correlations were applied to estimate the percentage of the variance of the endogenous variable being investigated attributed to its predictors. The direction of causality showed the direction of influence (either positive or negative) of a construct being investigated.

In using SEM, we identified from the onset, the nature of the constructs in this study. IA, PE, EE, SI, FC were identified as exogenous constructs while BI and Usage were identified as endogenous constructs. Spirituality, Communalism and Respect were investigated as moderating and mediating variables. These constructs were measured by specific indicators or scale items. An increase in the construct was reflected by an increase in all scale items. In this regard, the scale items were a true measure of the underlying construct. The scale items were highly correlated and interchangeable. Therefore, dropping a scale item still preserved the conceptual meaning of the construct. In other words, since the scale items are internally consistent, even if one scale item was dropped, the remaining items would not change the nature and form of the construct. The construct, C' , was modelled as a weighted ($\lambda_{,i}$) summation of the scale items (x_i) and the error term (e_i).

Equation 7-1: Modelling a Reflective Construct

$$C' = \lambda_{,i}x_i + e_i$$

The construct C' in this study is a reflective construct rather than formative construct, which is influenced by scale items.

Further, in the analysis, the following fundamental SEM requirements were addressed;

- a) Sufficiency of the sample size
- b) Missing data
- c) Normality, outliers, and linearity
- d) Determinant, eigen values, and eigen vectors of matrix
- e) Correctness of covariance matrix
- f) Identification of the theoretical model (df = 1 or greater), and
- g) Interpretation of the direct, indirect and total effects in the structural model.

7.7.1 Population

The sample in this study is collected from a population of tax paying SMEs who run their own businesses referred to as turnover taxpayers. The total population of this category of taxpayers is 132,354.

Literature shows that SEM requires large samples (Livote, 2009; Wolf *et al.*, 2013; Kline, 2015). Attempts have been made to adapt SEM techniques to work in smaller samples (Jung, 2013). Notwithstanding, Kline (Kline, 2015) notes that there are several factors that influence the sample size requirements in SEM:

- a) More complex models or those with more parameters require larger sample sizes than relatively smaller models with fewer parameters,
- b) analyses in which all outcome variables (endogenous variables) are continuous and normally distributed require smaller sample sizes,
- c) in situations where there are more incidences of missing data, larger sample sizes are required.

Given the above factors, there is therefore no simple or single rule of thumb regarding the determination of sample size that fits all situations in SEM. Kline (Kline, 2015) and Wolf *et al.* (2015) provide alternative options that can be employed in determining sample size in SEM. The first option is to consider the number of cases required in order for the results to have adequate statistical precision and second is to consider the minimum sample size needed in order for significance tests in SEM to have reasonable power (ability to explain the variance in outcome variables).

Based on the two options, a further review was undertaken involving the N: q rule and power analysis. Literature, revealed that an increase in regressive paths (attributed to large models) resulted in the need for larger samples (Kline, 2015; Wolf *et al.*, 2015). The recommended ratio for the N:q rule is 20:1 (Kline, 2015). AMfEE has ten (10) parameters; Internet Access, PE, EE, SI, FC, BI, UB, moderated by Spirituality, Communalism and Respect. Inductively, 20 x 10 cases are required to ensure adequacy in statistical precision and to have reasonable explanatory power. Since SEM requires a single sample size for the entire model (Dwivedi *et al.*, 2017), the derived sample size is therefore 200.

The nature of the research population includes SMEs. To deal with such a population, systematic random sampling in which the target population is ordered according to some

ordering scheme and then selecting elements starting from a random point at fixed periodic intervals (the sampling interval).

The nature of the research population includes Individuals who pay taxes. The total tax population for Domestic Taxes in Zambia is approximately 3,000,000 (3 million). From this wider population, the specific population of interest for this research are the turnover taxpayers who are SMEs. The number of turnover taxpayers is 132,354.

Since the minimum research sample size was 200, the sampling interval for such a sample is therefore 662. From the turnover tax population given, the n^{th} term (662^{nd}) is selected to form part of the sample size. The sample data would be selected using an SQL script.

7.7.2 Sampling Strategy

The nature of the research population included Individuals (particularly the SMEs). To deal with such a population, systematic sampling in which elements are selected starting from a random point at fixed periodic intervals (the sampling interval) was applied. The Tax population for Domestic Taxes was 3,000,000 (3 million). From this population, the population of turnover taxpayers (which includes SMEs) was **132,354**. The acceptable SEM sample size is 200. However, we chose a sample size that was relatively higher, 450, therefore the sampling interval was 294.12. From the turnover tax population given, the n^{th} term (294^{th}) is selected to form part of the sample size. This process was used to select the 450 respondents.

7.7.3 Unit of Analysis

The unit of analysis was every SME taxpayer that has used e-filing or e-payment services and hopes to use them and other digital government services again.

7.7.4 Missing data

The statistical analysis of data is affected by missing data values in variables. Not every subject has an actual value for every variable in the data set, some values may be missing. Such missing data is addressed by one of the five options. Deletion is applied in a situation where most of the data values are blank. Small number of blanks for continuous data is addressed using mean substitution while regression imputation is used for ordinal data. The other methods are expected maximum algorithm and response pattern. Listwise and pairwise deletion of cases

with missing data is avoided to eliminate the risk of reducing the sample size and affecting parameter estimates and standard errors.

7.7.5 Normality

Variables are examined to determine if they are normally distributed as non-normality can affect the resulting SEM Statistics. Skewness and kurtosis statistics were used in this study to measure normality.

7.7.6 Outliers

Outliers negatively affect statistics such as means, standard deviation and correlations. These are detected using methods such as box plots, scatterplots, histograms or frequency distributions. Outliers can either be explained, deleted or accommodated.

7.7.7 Linearity

It is important that variables are linearly related as non-linearity can reduce the magnitude of correlation. Linearity is detected using scatter plots and is addressed through transformations or by deleting outliers.

7.7.8 Common Method Bias

This section provides a brief explanation of the Common Method Bias, its potential sources and some of the remedial measures. The section also outlines how common method biases were addressed in this research.

Common Method Bias is the variance that is attributed to the effect of applying a common measurement method rather than to the constructs the measures represent (Podsakoff *et al.*, 2003). Method biases are one of the main sources of measurement error. Measurement error has both a systematic and a random component (Bagozzi, Yi and Phillips, 1991). Although both types of measurement error require attention, systematic measurement error is a particularly serious problem because it provides an alternative explanation for the observed relationships between measures of different constructs that is independent of the one hypothesized (Podsakoff *et al.*, 2003). One of the main sources of systematic measurement error is method variance. Method variance can be attributed to any one of the four following causes: independent and dependent variables being obtained from the same source; measurement items

themselves; context of the items within the measurement instrument; and context in which the measures are obtained (Bagozzi, Yi and Phillips, 1991; Podsakoff *et al.*, 2003).

Method variance or effects arising from obtaining independent and dependent variables from the same source or rater include consistency motif, implicit theories and illusory correlations, social desirability, leniency biases, acquiescence (yea-saying or nay-saying), positive and negative affectivity, and transient mood state (Podsakoff *et al.*, 2003). Method effects produced from measurement items or item characteristics are based on the manner in which items are presented to respondents to produce artifactual covariance in the observed relationships (Podsakoff *et al.*, 2003). These effects include item social desirability, item complexity and/or ambiguity, scale format and scale anchors, and negatively worded items. Method effects produced by item context arise from the influence or interpretation that a rater assigns to an item solely because of its relation to the other items making up a measurement instrument. These item context effects include item priming effects, item embeddedness, context induced moods, scale length, and intermixing items of different constructs on the questionnaire (Podsakoff *et al.*, 2003; Podsakoff, MacKenzie and Podsakoff, 2012; Viswanathan and Kayande, 2012). The fourth type of method effects are related to the context in which the measures are obtained. Key among these contextual influences are the time, location, and media used to measure the constructs (Podsakoff *et al.*, 2003).

Two key remedies for common method bias are procedural and statistical remedies. Procedurally, method variance can be controlled by identifying what the measures of the independent and dependent variables have in common and eliminating or minimizing commonalities through the design of the study. Some of the procedural techniques include obtaining measures of the independent and dependent variables from different sources, temporally, proximal, psychological, or methodological separation of measurement, protecting respondent anonymity and reducing evaluation apprehension, counterbalancing question order, and improving scale items (Podsakoff *et al.*, 2003). The statistical remedies include the Harman's single-factor test, Common latent factor and the use of a Marker variable.

This study employed the procedural remedies such as protecting respondent anonymity and reducing evaluation apprehension, temporally, proximal, psychological, or methodological separation of measurement (independent and dependent constructs clearly separated),

counterbalancing question order and improving scale items (a 5- point scale instrument provides less complex items compared to 7- or 10- point scales), which were incorporated into the research design. The systematic random sampling technique aided control of biases such as leniency and social desirability. By way of a pilot study, item ambiguity was minimized or even eliminated. Contextual influences such as time, location, and media were managed by spacing data collection, which was carried out in three geographically distinct locations. Online google survey, email and in person media were employed for data collection to reduce artifactual covariation.

7.7.9 Validity and Reliability

7.7.9.1 Validity

The validity of the questionnaire items was measured using the Content Validity Ratio (CVR);

Equation 7-2: Content Validity Ration

$$CVR = \frac{(ne - N/2)}{N/2}$$

where ne is the number of experts that rated the item as “Essential” and N the panel size. A zero value means that half the panel rated the items as essential and the other half did not. A value less than zero means fewer than half of the panel rated the items as essential, and a value of more than zero means more than half of the panel rated the items as essential making the questionnaire valid.

7.7.9.2 Reliability

The reliability was measured using Lee Cronbach’s alpha measure (Cronbach, 1951) specified in **Equation 7-3**.

Equation 7-3: Construct Reliability

$$\alpha = \frac{(Nxr)}{(1+(N-1)xr)},$$

where N is the number of items and r the average correlation between items. **Table 7.2** provides the standard values of Cronbach’s alpha and indicates the reliability levels.

Table 7.2: Cronbach's Alpha Classification(Peterson, 1994).

Cronbach's Alpha Value	Reliability
$\alpha \geq 0.9$	Excellent
$0.9 < \alpha \geq 0.8$	Good
$0.8 < \alpha \geq 0.7$	Acceptable
$0.7 < \alpha \geq 0.6$	Questionable
$0.6 < \alpha \geq 0.5$	Poor
< 0.5	Unacceptable

7.8 Ethical Consideration

This study adhered to the South African ethical requirements for conducting research involving Humans, which the University of South Africa has adopted. The UNISA Human Research Ethics Committee (HREC) has approved the data collection methods of this research. The approval protocol number was 029/YY/2018/CSET_SOC. The certificate of approval is attached in Appendix IV. This approval implies the following for this study:

- Research Significance: This research brings to the fore cultural factors that are often overlooked and yet have potent effects on digital government adoption. The study further widens the scope of digital government research.
- Integrity: The integrity of the research was upheld by reporting factually the outcome to preserve the originality of the findings.
- Respect: The survey was administered in a respectful manner by ensuring that question items were non-racial, not discriminatory, the questionnaire had a non-disclosure clause, and that completing the questionnaire was voluntary.
- Treatment of Participants: All participants (SMEs using internet) received the same questionnaire
- Care for Participants: To avoid stress, the questionnaire had fairly manageable number of questions. The questions were also constructed such that associated risks are minimised.
- Consent: The first part of the questionnaire has a hyper link to the consent form and is followed by a question to which a participant agrees or rejects. Hard copies of the consent forms are administered with manually administered questionnaires. All questionnaires were completed with the consent of participants.

7.9 Conclusion

This chapter described the research approach using Saunders research onion strategy. Having considered various options in each layer, a cross-sectional research based on a positivism philosophy and a quantitative methodology is adopted. The strategy employed is a survey using a five-point Likert Scale questionnaire. The next chapter considers data preparation and assesses the normality of the sample data.

CHAPTER 8

8. DATA PREPARATION

8.1 Introduction

Chapter 7 discussed research approach as well as various measurement units to ascertain the conformity of the sample data to predetermined criteria.

This chapter evaluates the data against the units of measurement to ascertain the degree of representation of the study population by sample data. This process includes data screening, detection of outliers, normality and linearity of the data. The tool used for parametric analysis (SEM) requires that the data assumptions are tested. SPSS 26.0 served as a tool for conducting preliminary investigation and to perform required data screening.

8.2 Study Population

Zambia conducts her population census after every ten years. The previous latest census conducted in 2010 placed the population at 13,092,666 (13 million) (Central Statistics Office Zambia, 2012) 60.5% of citizens reside in the rural part of Zambia while 39.5% of citizens reside in Urban parts of the country, of which the majority, 2,191,225 represents the population of Lusaka alone. Lusaka, which is our study population, represents 42% of the urban population. As of end of 2018, the internet penetration stood at 55% of the total population (about 7,248,773 internet users), which is more than the population in the urban parts of Zambia. Lusaka alone represents 30% of the internet users in Zambia. About 52% of the population are aged 15- 64 years.

The adequacy of the sample data was measured using the Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy, which confirmed adequacy of the collected sample data of 401 (out of a sample size of 450) with a KMO of .966 (**Table 8.1**). A KMO that is greater or equal to 0.5 is considered acceptable (Ul Hadia, Abdullah and Sentosa, 2016).

Table 8.1: Demography of the sample data.

KMO and Bartlett's Test		
KMO		.966
Bartlett's Test of Sphericity	Approximate Chi Square	16707.580
	Degrees of freedom	820
	Significancy	.000

Using the Bartlett's Sphericity Test, potency of the association among observed constructs and their associated latent constructs was seen to be significant with the p value < .001. Literature considers such a result to be multivariate normal and therefore acceptable for further analysis (Ul Hadia, Abdullah and Sentosa, 2016).

8.3 Demographic Information of the Study Sample

Table 8.2 shows that more males (57%) completed the questionnaire than females (43%) despite the fact that the Zambian population is composed of more females than males. This statistic could also mean that there are more males running businesses and in employment than females. The table indicates that most of the respondents that completed the questionnaire are aged in the range of 26 to 30 years (33.7%) followed by those aged between 31 and 35 years (26.4%). These are in the youth bracket in which coercion is expected to be high and therefore are easily influenced either by positive or negative forces.

Table 8.2 also shows that the respondents are well educated ranging from Certificate holders (20%), Diploma holders (29.4%), Bachelor's degree (40.4%), Master's degree (9.2%) to Doctorate degrees (1%). The aspect of failing to understand the questionnaire does not apply in this case. This also means that the respondents have the ability to learn and use the digital government systems. Illiteracy does not apply in this case. From the population of turnover taxpayers (SMEs) of 132,354 and sample size of 450, the sampling interval was 294.12. However, only 401 questionnaires were correctly completed.

Table 8.2: Demography of the sample data.

Demographic		Participants	% Sample	% Population
Gender	Male	228	56.9%	49.4%
	Female	173	43.1%	50.6%
	TOTAL	401	100%	100%
Age	20 years or under	1	0.25%	0.001%
	Between 21 and 25 years	24	5.99%	0.02%
	Between 26 and 30 years	135	33.7%	0.1%
	Between 31 and 35 years	106	26.4%	0.08%
	Between 36 and 40 years	69	17.2%	0.052%
	Between 41 and 50 years	56	13.96%	0.042%
	Above 51 years	10	2.5%	0.008%
	TOTAL	401	100%	0.3%
Education	Certificate or below	80	20%	0.06%
	Diploma	118	29.4%	0.089%
	Bachelor's degree	162	40.4%	0.122%
	Master's degree	37	9.2%	0.03%
	Doctorate	4	1%	0.003%
	TOTAL	401	100%	0.3%

Table 8.3: Internet Proficiency and Digital Government Services.

Demographics		Participants	%Sample	%Population
Internet Proficiency	Bad	7	1.7%	0.005%
	Satisfactory	10	2.5%	0.0076%
	Fairly Good	22	5.5%	0.017%
	Good	75	18.7%	0.057%
	Very good	156	38.9%	0.12%
	Excellent	130	32.4%	0.098%
	TOTAL	401	100%	
Frequency of internet use	2 months ago	5	1.2%	0.004%
	1 month ago	8	2%	0.006%
	2 weeks ago	5	1.2%	0.004%
	1 week ago	21	5.2%	0.015%
	Today	362	90.3%	0.27%
	TOTAL	401	100%	
e-filing experience	Yes	245	61.1%	0.2%
	No	156	38.9%	0.12%
	TOTAL	401	100%	
e-payment experience	Yes	383	95.5	0.3%
	No	18	4.5	0.014%
	TOTAL	401	100%	
	Self	137	34.2%	0.1%

Demographics		Participants	%Sample	%Population
Transactions done by?	Accountant	199	49.6%	0.15%
	Third Party	65	16.2%	0.05%
	TOTAL	401	100%	
Other Digital government services?	Yes	53	13.2%	0.04%
	No	348	86.8%	0.3%
	TOTAL	401	100%	

Internet Proficiency was used to measure the extent of comfort the respondents had with the use of internet. The survey results show that 38.9% were very good at using the internet, 32.4% were excellent, 18.7% were good, 5.5% were fairly good and 2.5% were satisfactory. Only 1.7% assessed their internet skills as bad. The implication of this result is that 98.3% of respondents were comfortable with use of the internet. Of these, 96.7% are frequent users of the internet.

The survey results also showed that 61.1% had experience in using the e-filing service while 38.9% did not have experience. On the other hand, 95.5% of the respondents had experience with using the e-Payment service. Only 4.5% did not have experience in using e-payment. While most respondents were comfortable with e-payment, a relatively big number (38.9%) were not comfortable with e-filing. This could affect electronic filers in terms of numbers. Since e-filing is a precursor to e-payment, this could ultimately affect the overall tax collected through digital government platforms.

Results also showed that 49.6% of e-filing as well as e-payment services were done by Accountants, 34.2% were completed by Business Owners while 16.2% were done by Third Parties (Tax consultants). This stratification is important so that interventions are focused on specific groups.

Other digital government services implemented include e-Pension, e-Company registration, e-Procurement, e-Voucher (a service for processing payments for farmers) and e-Payslips (for processing payslips for government employees). All Turnover Tax registered companies

(medium, small and micro companies) are expected to file electronic or manual returns with the companies responsible for pension and company registration. Only government employees who also run their own companies would use the e-Payslips service. The e-Voucher service would be used by turnover companies that are in the farming sector. Only 13.2% used other digital government services besides e-filing and e-Payment. 86.8% of respondents did not use other digital government services even though they were available. This statistic highlights the core issue of lagged digital government adoption in low-income countries with specific focus on Zambia.

8.4 Data Screening

This section identified the type of data that was captured and also the data that was not included in the study. The section also assesses positive definiteness, extreme collinearity, outliers and missing data in the sample data in the study.

Data was captured from a sample of 450 respondents using a positivist approach. The Small and Micro Enterprises which were in the scope of this study but are not registered for taxes were not included in the study. The large and medium taxpayers were also not included in the study. Only Small and Micro Enterprises that were registered for taxes and perform electronic filing and electronic payment of taxes were included in the study.

Positive definiteness refers to a positive definite data matrix, used by the SEM program, that is **non-singular or has an inverse; whose eigenvalues are all positive with a positive determinant and no out-of-bounds correlations or covariances**. A data matrix that lacks these characteristics is non-positive definite (Kline, 2015). Attempts to analyse such a data matrix would most likely not succeed. During the SEM computations, the inverse of the data matrix is derived as part of regression operations. These operations would not succeed for a singular matrix since it does not have an inverse.

Positive eigenvalues are important because they explain all the variance of the original variables. If any eigenvalue is zero, it means that the matrix is singular or is an indication of some pattern of collinearity that involves at least two variables. Negative eigenvalues (< 0) are a sign or indication of a data matrix element, correlation or covariance that is out of bounds.

Table 8.4 presents the computed eigenvalues of the 41 construct items using the Principal Component Analysis method.

Table 8.4: Eigenvalues.

Component	Eigenvalues		
	Total	% of Variance	Cumulative %
1	22.881	55.807	55.807
2	2.437	5.944	61.751
3	1.488	3.630	65.381
4	1.254	3.057	68.439
5	1.073	2.617	71.056
6	1.003	2.446	73.502
7	.885	2.159	75.661
8	.824	2.010	77.671
9	.767	1.871	79.542
10	.630	1.536	81.078
11	.588	1.434	82.512
12	.539	1.316	83.827
13	.463	1.130	84.958
14	.419	1.023	85.980
15	.397	.969	86.949
16	.372	.908	87.858
17	.364	.888	88.746
18	.325	.792	89.538
19	.316	.771	90.309

Component	Eigenvalues		
	Total	% of Variance	Cumulative %
20	.300	.732	91.040
21	.289	.705	91.746
22	.270	.658	92.404
23	.256	.625	93.029
24	.232	.565	93.594
25	.225	.548	94.143
26	.216	.527	94.669
27	.210	.512	95.181
28	.197	.481	95.662
29	.192	.469	96.132
30	.185	.452	96.583
31	.173	.422	97.005
32	.154	.376	97.381
33	.148	.361	97.742
34	.139	.340	98.082
35	.138	.337	98.418
36	.130	.318	98.737
37	.122	.297	99.034
38	.115	.280	99.313
39	.102	.248	99.562

Component	Eigenvalues		
	Total	% of Variance	Cumulative %
40	.099	.241	99.803
41	.081	.197	100.000

From **Table 8.4** above, it can be seen that all eigenvalues are positive. There is no eigenvalue that is zero or negative. This confirms that the data matrix from the sample data is non-singular and that collinearity is not evident at this stage. The absence of negative eigenvalues also showed that there were no out-of-bounds correlations or covariances.

Extreme collinearity occurs when what seems to be distinct constructs essentially evaluate an identical point. For example, assume variable X measures internet access and variable Y measures facilitating conditions. If the correlation between X and Y, $r_{xy} > .85$ (Schumacker and Lomax, 2004), then X and Y are redundant. Either X or Y is dropped to resolve collinearity. Extreme collinearity could not be assessed at this stage but is assessed in Chapter 9.

The sample data was also screened for outliers. Outliers are scores that exhibit unique characteristics from the rest of the data set. Outliers are either univariate or multivariate. A univariate outlier is a score on one variable that is outermost. Univariate outliers are identified by inspecting frequency distributions of the z score; scores that are 3 standard deviations greater than the mean are classified outliers (Kline, 2015). Outliers that are multivariate, on the other hand, have extreme scores on two or more variables. **Table 8.5** shows that all standard deviations are less than 3 deviations from the absolute mean scores, which signifies absence of outliers in data set.

All the completed questionnaires that had missing data were eliminated from the study.

Table 8.5: Descriptive Statistics.

	Mean	Standard Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
UBEf1	4.11	.901	.811	-1.142	.122	1.349	.243
UBEf2	4.10	.878	.770	-1.021	.122	1.219	.243
UBEf3	4.10	.823	.677	-.868	.122	.901	.243
UBEf4	4.14	.843	.710	-1.024	.122	1.377	.243
IAEf1	4.28	.934	.873	-1.439	.122	1.756	.243
IAEf2	4.08	1.036	1.073	-1.066	.122	.464	.243
IAEf3	4.20	.903	.815	-1.080	.122	.827	.243
IAEf4	4.23	.927	.859	-1.254	.122	1.306	.243
PEEf1	4.30	.866	.749	-1.357	.122	1.920	.243
PEEf2	4.27	.856	.733	-1.201	.122	1.286	.243
PEEf3	4.39	.738	.544	-1.075	.122	.904	.243
PEEf4	4.34	.815	.664	-1.303	.122	1.947	.243
EEEf1	4.21	.944	.891	-1.128	.122	.685	.243
EEEf2	4.21	.937	.879	-1.025	.122	.238	.243
EEEf3	4.26	.880	.775	-1.139	.122	1.005	.243
EEEf4	4.36	.806	.650	-1.224	.122	1.460	.243
SIEf1	4.12	.880	.774	-1.197	.122	1.772	.243
SIEf2	4.02	.958	.917	-.835	.122	.044	.243
SIEf3	4.25	.820	.673	-1.227	.122	2.053	.243

	Mean	Standard Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SIEf4	4.29	.811	.657	-1.259	.122	2.005	.243
FCEf1	4.16	.968	.936	-1.178	.122	.977	.243
FCEf2	4.26	.843	.710	-1.061	.122	.673	.243
FCEf3	4.17	.911	.830	-.975	.122	.441	.243
FCEf4	4.23	.847	.717	-.903	.122	.335	.243
FCEf5	4.32	.824	.680	-1.283	.122	1.818	.243
BIEf1	4.11	.890	.793	-.921	.122	.532	.243
BIEf2	4.15	.898	.806	-1.023	.122	.895	.243
BIEf3	4.14	.803	.644	-.705	.122	.021	.243
BIEf4	4.19	.826	.682	-.922	.122	.704	.243
Sp1	4.02	1.081	1.170	-1.089	.122	.596	.243
Sp2	4.24	.802	.644	-1.019	.122	1.214	.243
Sp3	3.95	1.150	1.323	-1.131	.122	.566	.243
Sp4	4.04	1.087	1.181	-1.212	.122	.991	.243
Co1	4.09	.977	.955	-.951	.122	.348	.243
Co2	4.05	1.005	1.010	-.778	.122	-.270	.243
Co3	4.06	1.008	1.016	-.959	.122	.340	.243
Co4	4.17	.932	.870	-1.026	.122	.622	.243
Re1	4.20	.925	.855	-1.207	.122	1.235	.243

	Mean	Standard Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Re2	4.02	1.039	1.080	-.779	.122	-.221	.243
Re3	3.99	1.012	1.025	-.692	.122	-.350	.243
Re4	4.06	.996	.991	-.746	.122	-.318	.243

Standard deviation is also used as a measure of dispersion to ascertain the reliability of the data. It is a number used to tell how measurements for a group are spread out from the mean or expected value. A low standard deviation implies proximity of most values to the mean, signifying resemblance in views and values amongst respondents. This also signifies reliability of the data. When standard deviation is high, it denotes dispersed values, signifying high variance. The standard deviation presents a good measure of variation (Kline, 2015). It is based on every item of the distribution and is less affected by fluctuations of sampling than most other measures of dispersion. **Table 8.5** shows that the data is closer to the mean.

8.5 Normality

In Structural Equation Modelling, the estimation method of maximum likelihood assumes multivariate normality for continuous outcome variables. In this study, normality (Kline, 2015) means that ;

- a) distributions of individual items exhibit normal trends;
- b) all distributions of a joint nature concerning paired variables exhibits bivariate normality, and
- c) bivariate scatter plots show linearity with homoscedastic residuals.

The normality of a univariate distribution is measured using skewness as well as kurtosis. When skew is positive, it reflects a large number of scores below mean while a skew that is negative reflects a large number of scores above mean. **Table 8.5** shows that our skew values are negative indicating that most of the scores are above the mean. Severe skewness occurs when the absolute skew statistic values are greater than 3 (Kline, 2015). **Table 8.5** shows that all the

absolute statistic values of skewness are less than 2, signifying that the sample data is within the acceptable margins of normality.

Positive kurtosis shows weightier ends and significantly elevated peak while negative kurtosis shows the reverse. A distribution that has positive kurtosis is called leptokurtic while one that has negative kurtosis is platykurtic. Severe kurtosis occurs if the absolute statistic values are greater than 10 (Kline, 2015). **Table 8.5** shows absence of severe kurtosis. This means that sample data is within the acceptable margins of normality.

Ensuring that sample data fitted the structural model was critical. Section 8.6 describes fit indices used.

8.6 Model Fit Indices

Model fit establishes extent by which variance-covariance matrix fits structural equation model. The measurements utilised in model fit includes Chi-square (χ^2), Goodness-of-fit Index (GFI) and adjusted goodness of fit (AGFI), Comparative fit index (CFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), Incremental fit index (IFI), root-mean-square error of approximation (RMSEA), standardised root-mean-square residual index (SRMR)) (Cangur and Ercan, 2017). The CFI, TLI and NFI are model comparison indices that match a given archetype against an independence archetype, which establishes a baseline (Kline, 2015).

The χ^2 statistic is traditionally used to evaluate entire model for fitness. A significant CMIN/df reflects difference in implied and observed variance-covariance matrices. Such a difference could arise from a variation in sampling if the statistic is significant. The converse is true when the χ^2 is not significant, the value denotes similarity of the two matrices, depicting a significant reproduction of the sample variance-covariance matrix by the theoretical model . Researchers recommend that CMIN/df should not exceed 5.0 (Hooper, Coughlan and Mullen, 2008).

The χ^2 model fit criteria is sample size sensitive because increases in sample size (particularly greater than 200) result in the χ^2 statistic which tends to exhibit significant probability levels (Kline, 2015). On the contrary, as the sample size decreases (especially those less than one hundred), the χ^2 statistic shows non-significant probability measure. Determining an appropriate sample size is therefore cardinal. For this research, a sample size of 450 serves as an acceptable threshold that maintains statistical power as well as ensuring stable parameter estimations and standard errors (Kline, 2015).

χ^2 computations of models comprising latent constructs largely involve three methods of estimation; maximum likelihood (ML), generalised least squares (GLS) as well as unweighted least squares (ULS). These methods are applied to appropriate solutions. If the observed variables meet the multivariate normality assumption, the ML estimations are consistent, unbiased, efficient, scale-invariant, scale-free, and normally distributed. The GLS estimations are similar to ML but under a less rigorous multivariate normality assumption and provide an estimated chi-square test of model fit to the data. The ULS estimations are not dependent on normality distribution assumption. ULS estimations are inefficient and neither scale-invariant nor scale-free. For the reasons given, we applied the maximum likelihood (ML) estimation method in the computations.

GFI is based on the ratio of the sum of the squared differences between the observed and reproduced matrices to the observed variances. GFI was used to measure degree of variance as well as covariance in the original matrix which is predicted by reproduced matrix. Scholars estimate acceptable GFI fit levels to be 0.9 and above. This means that the reproduced matrix predicts 90% of the original matrix.

Let χ^2_m be the chi-square of suggested model and χ^2_i be chi-square of independence model, the GFI index is computed as follows:

Equation 8-1: Goodness of Fit Index

$$GFI = 1 - \left[\frac{\chi^2_m}{\chi^2_i} \right]$$

AGFI is adjusted for the degrees of freedom of the model relative to its number of variables. Equation 8-2 presents the computational formula for AGFI index.

Equation 8-2: Adjusted Goodness of Fit Index

$$AGFI = 1 - \left[\left(\frac{k}{df} \right) (1 - GFI) \right]$$

GFI as well as AGFI compare model fit for two dissimilar alternative models using same data. The level of acceptable fit for GFI, AGFI and other indices were used as baseline for model modification. In fact, the AGFI measure provided an index of model parsimony.

CFI is an incremental fit index whose values range from zero to one. This index was used to compare the amount of departure from close fit for the proposed model against that of the independence (null) model. When $CFI = 1$, the proposed model has no departure from close fit. Initially, a CFI value equal to or greater than 0.90 was considered ideal.. Nonetheless, literature argues for a higher statistical value that is more than 0.90 to guarantee absence of mis specified models (Hooper, Coughlan and Mullen, 2008). A statistic of $CFI \geq 0.95$ suggests good fit (Hooper, Coughlan and Mullen, 2008) although scholars argue that a CFI value ≥ 0.8 is tolerable (Khalil, 2012).

The Tucker-Lewis index (TLI) was applied to compare alternative models; the proposed model against the null model. The independence model chi-square value also describes the null model. A TLI statistic of zero implies no fit while one implies perfect fit. Another index in the same category as TLI is the incremental fit index (IFI), which resolves aspects of model parsimony. Unlike other indices, IFI is not sensitive to the size of sample data. Its values also lie between zero and one.

The objective of model evaluation is to verify its validity and that of its constructs by determining overall model fit, constructs' reliability, standardised factor loadings, critical ratio (CR), as well as correlation between the constructs (Hooper, Coughlan and Mullen, 2008; Kline, 2015; Cangur and Ercan, 2017).

The model fit statistics provide a basis for comparing specified model (AMfEE) with independence model to show model fit (Schaupp and Hobbs, 2009). RMSEA is determined by considering discrepancy of each degree of freedom. A statistic figure of 0.08 or less shows an acceptable error of estimation (Treiblmaier, Pinterits and Floh, 2004). GFI ranges from zero(no fit) to one (perfect fit) (Treiblmaier, Pinterits and Floh, 2004). GFI is a stable and robust index (Iacobucci, 2010). It denotes overall extent of fit and is not modified for degrees of freedom. **Table 8.6** presents the acceptable baselines for fit indices.

Table 8.6: Acceptable Levels of Model Fit indices (Treiblmaier, Pinterits and Floh, 2004).

Model Fit Measure	Levels of Acceptable Fit
χ^2/df (CMIN/df)	<3 is good, <5 is acceptable
Root mean square error of approximation (RMSEA)	Average difference per degree of freedom expected to occur in the population, not the sample. Acceptable values under 0.08 (≤ 0.08)
Standardised Root Mean Square Residual (SRMR)	<0.05 is good <0.1 is acceptable
GFI, AGFI, IFI and Comparative fit index (CFI)	GFI, IFI and CFI >0.95 is superior, >0.90 is good, >0.80 is tolerable. AGFI > 0.8 is good
Normed fit index (NFI)	Recommended Level: 0.90 or greater
Tucker-Lewis index (TLI) or NNFI	Recommended Level: 0.90 or greater
Critical Ratio (CR)	> ± 1.96 , is significant at the level of $p < 0.001$
Item wise standardised factor loading	> 0.7 is superior, > 0.50 is good
Correlation between the constructs	<0.85

The correlation between exogenous constructs demonstrates discriminant validity if the correlation coefficient is equal to or less than 0.85 (Awang, 2012). A correlation coefficient

more than 0.85 denotes multicollinearity problems or that the exogenous constructs are redundant (Schumacker and Lomax, 2004), which would weaken the analysis of the model.

8.7 Conclusion

This chapter showed that the sample data represented the study population. Data screening showed that no outliers were detected, the sample data was normally distributed and there was no evidence of collinearity in the data.

The sample data was therefore found acceptable for further data analysis, which is conducted in Chapter 9.

CHAPTER 9

9. DATA ANALYSIS

9.1 Introduction

Chapter 8 discussed data preparation, data fit measurements and evaluated the sample data against predetermined parameters. This chapter presents analysis based on Structural Equation Modelling (SEM) in SPSS AMOS and Model 1 of Hayes' PROCESS macro in SPSS 26.0. SEM has proven capabilities to assess both measurement and path models to test their theoretical relationships. SEM is a quantitative research instrument which has recently become more associated with information systems.

Quantitative research instruments, particularly those involving positivist epistemology, are employed in capturing as well as measuring theoretical models (Khalil and Nadi, 2012). The abstract concepts are developed to suggest, corroborate, or reject formerly proposed models and to derive appropriate deductions as well as outcomes. The reliability as well as validity of the tool applied is verified by application of appropriate heuristics (Straub, 1989). To that effect, appropriate investigative methods were applied to define additional constructs which include Internet Access, African spirituality, African communalism as well as respect for authority and elders. Confirmatory Factor Analysis was then performed to confirm factor loadings for the model.

9.2 Model Reliability

Model reliability defines extent of precision of loadings in a chosen sample. Loadings or scores are approximated by considering the difference between one and the sum of observed variance arising from random error. (Kline, 2015). The weight of the score, also called reliability coefficient, indicates internal consistency of the model. An experimental reliability coefficient that is negative is construed to be zero (Kline, 2015) indicating an internal consistency problem. Such a coefficient requires detailed examination of the item total correlation. Reliability coefficients differ from factor loadings in that the former indicates the level of internal consistency while the latter shows matchiness of questions to latent variables.

The type of reliability coefficient reported is called Cronbach's alpha. It evaluates inner stability or degree of consistency of responses to which answers are consistent through measured items. Low stability (i.e. approaching zero or less than .5), means items are so

diverse that the sum of scores presents an inappropriate measure of analysis (Kline, 2015). Such data is unreliable and may not provide realistic inferences. As a principle, lowest item-total correlation for an acceptable Cronbach alpha is .40 (Gliem and Gliem, 2003).

The conceptual equation for Cronbach’s alpha is given by;

Equation 9-1: Cronbach's Alpha

$$\alpha = \left(\frac{k}{k-1}\right)\left(1 - \frac{\sum_{i=1}^k \sigma_{y_i}^2}{\sigma_x^2}\right)$$

.....where: *k* refers to the number of scale items

$\sigma_{y_i}^2$ refers to the variance associated with item *i*

σ_x^2 refers to the variance associated with the observed total scores

Table 9.1 presents the overall Cronbach’s Alpha for e-filing model.

Table 9.1: Overall Cronbach's alpha for e-Filing.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.980	.980	41

Table 9.1 shows that the e-filing model exhibited high stability across 41 items. The Cronbach’s Alpha was 0.980. **Table 9.2** shows overall Cronbach’s Alpha for e-Payment model.

Table 9.2: Overall Cronbach's Alpha for e-Payment.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.978	.978	41

Table 9.2 shows that the e-Payment model also exhibited high stability across 41 items. The Cronbach’s Alpha was 0.978.

Individual construct reliabilities were also measured over three scales; the two digital government services; electronic filing and electronic payment, and indigenous African cultural constructs. **Table 9.3** shows the individual construct reliabilities.

Table 9.3: Individual Construct Reliability.

Construct	Items	Cronbach's Alpha (Internal Consistency)	Construct's Reliability Status (Gliem and Gliem, 2003)	Items–Total Correlation
Scale 1: Electronic Filing Service.				
Internet Access (EfIA)	4	.82	Good	.54- .69
Performance Expectancy (EfPE)	4	.90	Excellent	.68 - .78
Effort Expectancy (EfEE)	4	.89	Good	.69 - .83
Social Influence (EfSI)	4	.77	Acceptable	.48 - .71
Facilitating Conditions (EfFC)	5	.83	Good	.49 - .71
Behavioural Intention (EfBI)	4	.90	Excellent	.71 - .83
Usage Behaviour (EfUB)	4	.89	Good	.66 - .88
Scale 2: Electronic payment Service				
Internet Access (EpIA)	4	.78	Acceptable	.56 - .72

Construct	Items	Cronbach's Alpha (Internal Consistency)	Construct's Reliability Status (Giem and Gliem, 2003)	Items–Total Correlation
Performance Expectancy (EpPE)	4	.84	Good	.60 - .70
Effort Expectancy (EpEE)	4	.87	Good	.63 - .78
Social Influence (EpSI)	4	.79	Acceptable	.49 - .72
Facilitating Conditions (EpFC)	5	.85	Good	.58 - .72
Behavioural Intention (EpBI)	4	.89	Good	.71 - .79
Usage Behaviour (EpUB)	4	.92	Excellent	.76 - .88
Indigenous African Cultural Constructs				
Spirituality (SP)	4	.78	Acceptable	.41 - .68
Communalism (Co)	4	.85	Good	.58 - .76
Respect (Re)	4	.77	Acceptable	.43 - .65

Literature shows that for studies involving Structural Equation Modelling, observed or latent variable analyses, it is ideal to analyse scores from measures that are internally consistent (Kline, 2015). All the constructs in **Table 9.3** demonstrate acceptable internal consistency across different scales with Cronbach alpha > .7 (Awang, 2012).

9.3 Validity of a construct

Validity of a construct indicates degree by which model items measure target hypothetical construct (Kline, 2015). Construct validity helps confirm trustworthiness of inferences from the data. The validity of a construct is attained if the appropriate indices that measure it reach a predefined threshold (Awang, 2012). Indices reflect the appropriateness of items in determining corresponding latent variables or how appropriate constructs are in measuring the model.

The two major forms of construct validity are convergent as well as discriminant (Kline, 2015). Convergent form of validity is the measure of commonness or matchiness of the construct items. Discriminant form of validity defines extent of distinctness of constructs within a model (Wang, French and Clay, 2017). Validity of variables in AMfEE was evaluated by means of both exploratory and confirmatory measurements. Section 9.4 considers the exploratory measurements of the AMfEE model.

9.4 AMfEE – Exploratory Factor Analysis (EFA)

Validity of AMfEE was established by means of exploratory factor analysis (EFA). Literature reveals that this method precedes latent variable modelling (Distefano, Zhu and Mîndrilă, 2009). Application of EFA occurs in many ways; trimming big quantities of questionnaire items to reduced components; discovering latent perspectives in data sets, or investigating strength of association between items and construct. EFA was applied to understand the latter. EFA is also used as a tool to develop theory, particularly during definition of principle structure of model variables. It is also used in the case of uncertainty of the association among question items and respective latent constructs. Where there is no uncertainty, i.e. clear theory exists, association between constructs and items is confirmed using CFA only (Kline, 2015). The links among latent variables with question items are referred to as factor loadings both in EFA and CFA. Factor loadings show the degree by which question items determine underlying unobserved variables (Kline, 2015).

Although AMfEE is based on the validated UTAUT (Venkatesh , Morris , Davis, 2003) theory, the modification of adopted items and variables dictated use of both EFA and CFA. Further, additional variables which include Internet Access, and cultural moderators of spirituality, communalism and respect for elders and authority were included. These modifications and

inclusions necessitated EFA usage to ascertain significance of underlying structure of AMfEE model. EFA was also conducted to ascertain convergent validity.

The factor loadings for Internet Access, Spirituality, Communalism and Respect for authority and elders were explored to determine convergent validity using the Principle component analysis method. **Table 9.4 show that** all the four items measuring respective constructs loaded significantly as shown in, thus demonstrating convergent validity of the items on each construct.

Table 9.4: Exploratory Factor Analysis of new constructs.

Question items	Internet Access	Spirituality	Communalism	Respect
IAEf1	.724			
IAEf2	.841			
IAEf3	.820			
IAEf4	.774			
Sp1		.787		
Sp2		.675		
Sp3		.806		
Sp4		.819		
Co1			.814	
Co2			.859	
Co3			.844	
Co4			.762	
Re1				.654
Re2				.826
Re3				.828

Question items	Internet Access	Spirituality	Communalism	Respect
Re4				.784

The loadings, also referred to as factor scores, are produced by both non-refined and refined methods. In non-refined methods, averages as well as standard deviations of factor loadings are predefined (Schumacker and Lomax, 2004). Rather, average as well as standard deviation of loadings is determined by characteristics of items (.such as measurement scale, changeability of data). Further, non-refined methods could yield significant loadings, despite the EFA results being orthogonal (Kline, 2015). Refined methods find their use in situations where principal components as well as common factors are utilised with EFA. Resultant factor loadings are linear permutations of question items and error term discrepancy (Distefano, Zhu and Mîndrilă, 2009). Common refined methods employ standardized statistics to compute loadings, thereby generating scores comparable to a z-score metric, with values between -3.0 and +3.0 (Distefano, Zhu and Mîndrilă, 2009).

Common refined methods are generally three; *Regression*; *Bartlett*; as well as *Anderson-Rubin* (Distefano, Zhu and Mîndrilă, 2009).

Regression method predicts the locus of question items on the factor. Regression varies from non-refined weighted sum (NRWS) method (Uluman and Doğan, 2016). NRWS method indicates degree by which measured factor was exhibited by each case. NRWS method computes scores without utilising the core model. In the regression method, exogenous variables of the regression equation form standardized experimental statistics of items in the estimated factors. These exogenous constructs are weighted by regression coefficients, achieved through multiplication of inverse correlation matrix of experimental variables by factor loadings matrix. Where factors are oblique, a factor correlation matrix is used in which factor scores represent regression equation dependent variables. Under this process, calculated scores are standardized to a mean of zero; nonetheless, for principal components method, the standard deviation of the distribution of loadings is 1 while for principal axis method the squared multiple correlation between items and constructs is adopted (Tabachnick & Fidell, 2001). In SPSS, regression scores are generated by selecting Scores in Factor Analysis window, and then “Save as variables” box in Factor Scores window as well as selecting the “Regression” (default) option. Regression method provides optimal values for construct validity.

With Bartlett's approach (Ul Hadia, Abdullah and Sentosa, 2016), scores are based on factors that are common. The sum of squared components for the "error" factors across the set of variables is reduced, and resultant scores are greatly correlated only to their corresponding factor but not with other factors. Bartlett factor scores are generated through multiplication of row vector of observed variables by inverse of diagonal matrix of variances of the unique factor scores, and the factor pattern matrix of loadings. Resultant values are then multiplied by the inverse of the matrix product of the matrices of factor loadings and the inverse of the diagonal matrix of variances of the unique factor scores. Bartlett method calculates scores while maintaining factors orthogonal (i.e. uncorrelated) (Kline, 2015; Uluman and Doğan, 2016).

Anderson and Rubin (1956) propose a method which is a variant of Bartlett method, in which the least squares formula is modified to generate uncorrelated factor scores, both with other factors and with each other. Calculation techniques are more complicated than those of Bartlett method. They require multiplication of the vector of exogenous variables by the inverse of a diagonal matrix of the variances of the disturbance term factor scores, and the factor pattern matrix of loadings for the exogenous variables. Results are then multiplied by the inversion of the symmetric square root of the matrix product obtained by multiplying the matrices of eigenvectors and eigenvalues. Eigenvalues and eigenvectors are utilised in matrix decomposition factor analysis. Eigenvalues represent fraction of variance attributed to respective factor. An $m \times m$ (m being factor quantities) matrix possessing eigenvalues on the diagonal with 0's elsewhere is used in the computations. Eigenvectors comprise a single value for every variable in the factor analysis. The product of eigenvectors and square root of eigenvalues generates orthogonal factor loadings, possessing a mean of 0 and a standard deviation of 1. SPSS employs Anderson and Rubin by selecting it in Factor Analysis: Factor Scores window.

Structural Equation Modelling approach, adopted in this study, makes use of regression method in which regression weights serve as standardised factor loadings for calculating scores. The regression method is therefore purposely used in this study.

The items that load comprehensively or provide a clean load on a specific factor without cross-loading on others exhibit convergent validity. Conversely, items that cross-load on other factors demonstrate discriminant validity (Gefen, Rigdon and Straub, 2011).

Convergent and discriminant validity are also exhibited through total, direct and indirect effects which find their relevance in causal analysis (Kline, 2015), a branch of structural equation modelling particularly relevant for this study.

Total effect, denoted by $P(Y_x = y)$ (Pearl, 2001), computes likelihood of outcome variable Y assuming a value y when X is fixed to x by exterior interventions. Pearl (2001) notes that this quantity in most cases lacks sufficient characterisation of the focus of study. Direct effects on the other hand are more focused on a one to one relationship. For instance, direct impact of X on Y quantifies an influence without mediation. This entails that a change by 1 standard deviation in X would attract a change, not necessarily by the same magnitude, in Y , keeping other factors fixed (Bollen, 2006). If all factors were held fixed, all causal paths would be served through direct path $X \rightarrow Y$, without intermediaries. Direct effects confirm convergent validity. Indirect effects cannot be defined like direct. Indirect effects are largely driven by causal mediation, an important aspect of this study. As noted in earlier chapters, social influence emanates from normative beliefs, community norms or the extent of respect that citizens hold for authority and elders. These factors modelled as spirituality, African communalism and respect are being examined for their moderating and mediating effect on the relationship linking social influence with intention for digital government adoption.

The nature of the digital government services used in the investigation dictates application of two scales: e-filing and e-payment scales. Exploratory factor analysis with principal axis method for the e-filing service resulted in a clean loading as shown in **Table 9.5** below.

Table 9.5: AMfEE item loading for e-filing Service.

<u>Question items</u>	IA	FC	SI	EE	PE	C	R	S	BI
IAEf1	.800	.000	.000	.000	.000	.000	.000	.000	.000
IAEf2	.897	.000	.000	.000	.000	.000	.000	.000	.000
IAEf3	.865	.000	.000	.000	.000	.000	.000	.000	.000
IAEf4	.838	.000	.000	.000	.000	.000	.000	.000	.000
FCEf1	.000	.854	.000	.000	.000	.000	.000	.000	.000

<u>Question items</u>	IA	FC	SI	EE	PE	C	R	S	BI
FCEf2	.000	.820	.000	.000	.000	.000	.000	.000	.000
FCEf3	.000	.764	.000	.000	.000	.000	.000	.000	.000
FCEf4	.000	.858	.000	.000	.000	.000	.000	.000	.000
FCEf5	.000	.846	.000	.000	.000	.000	.000	.000	.000
SIEf1	.000	.000	.665	.000	.000	.000	.000	.000	.000
SIEf2	.000	.000	.697	.000	.000	.000	.000	.000	.000
SIEf3	.000	.000	.718	.000	.000	.000	.000	.000	.000
SIEf4	.000	.000	.678	.000	.000	.000	.000	.000	.000
EEEf1	.000	.000	.000	.910	.000	.000	.000	.000	.000
EEEf2	.000	.000	.000	.903	.000	.000	.000	.000	.000
EEEf3	.000	.000	.000	.903	.000	.000	.000	.000	.000
EEEf4	.000	.000	.000	.833	.000	.000	.000	.000	.000
PEEf1	.000	.000	.000	.000	.868	.000	.000	.000	.000
PEEf2	.000	.000	.000	.000	.857	.000	.000	.000	.000
PEEf3	.000	.000	.000	.000	.886	.000	.000	.000	.000
PEEf4	.000	.000	.000	.000	.840	.000	.000	.000	.000
Co1	.000	.000	.780	.000	.000	.885	.000	.000	.000
Co2	.000	.000	.795	.000	.000	.902	.000	.000	.000
Co3	.000	.000	.780	.000	.000	.885	.000	.000	.000

<u>Question items</u>	IA	FC	SI	EE	PE	C	R	S	BI
Co4	.000	.000	.719	.000	.000	.816	.000	.000	.000
Re1	.000	.000	.622	.000	.000	.000	.738	.000	.000
Re2	.000	.000	.738	.000	.000	.000	.876	.000	.000
Re3	.000	.000	.748	.000	.000	.000	.889	.000	.000
Re4	.000	.000	.712	.000	.000	.000	.846	.000	.000
Sp1	.000	.000	.739	.000	.000	.000	.000	.853	.000
Sp2	.000	.000	.666	.000	.000	.000	.000	.769	.000
Sp3	.000	.000	.738	.000	.000	.000	.000	.853	.000
Sp4	.000	.000	.755	.000	.000	.000	.000	.872	.000
BIEf1	-.237	.000	1.081	-.179	.066	-.054	-.134	-.191	.890
BIEf2	-.243	.000	1.107	-.184	.068	-.056	-.138	-.196	.912
BIEf3	-.238	.000	1.086	-.180	.066	-.055	-.135	-.192	.894
BIEf4	-.222	.000	1.014	-.168	.062	-.051	-.126	-.179	.835

BIEf = Behavioural Intention towards e-Filing; **Comm** = Communalism; **Sp** = Spirituality; **FCEf** = Facilitating Conditions for e-Filing; **SIEf** = Social Influence towards e-Filing; **EEef** = Effort Expectancy by e-Filing; **PEef** = Performance Expectancy from e-Filing; **IAEf** = Internet Access for e-Filing; **R** = respect; **C** = Communalism; **S** = Spirituality; **FC** = Facilitating Conditions; **SI** = Social Influence; **EE** = Effort Expectancy; **PE** = Performance Expectancy; **IA** = Internet Access.

Table 9.6 shows that all question items loaded significantly. For example, factor or question items for internet access (IA) denoted by IAEf1, IAEf2, IAEf3 and IAEf4 had factor loadings greater than 0.8. Similarly, the factor loading of BIEf1 on BI was .890. That is, as a result of direct effects of e-filing intention on BIEf1, when BI increases by 1 standard deviation, BIEf1

correspondingly increases by 0.890 standard deviations. In other words, BIEf1 significantly positively represents the latent variable BI. Likewise, BIEf2, BIEf3 and BIEf4 have significant loadings. The loadings for Respect are all significant. Re1, Re2, Re3 and Re4 are all greater than 0.5 (Awang, 2012). Similarly, the loadings for Communalism; Co1, Co2, Co3 and Co4 and Spirituality; Sp1, Sp2, Sp3 and Sp4 are all greater than 0.5.

Table 9.6 also shows a significant relationship between SI and the constructs; spirituality, African communalism, and respect for authority and elders. The factor loadings for all items presented in

Table 9.6 are higher than 0.5. Similarly, factor loadings for the e-payment model are presented in **Table 9.6**.

Table 9.6: AMfEE item loading for e-Payment service.

<u>Question Items</u>	IA	FC	SI	EE	PE	C	R	S	BI
IAEp1	.847	.000	.000	.000	.000	.000	.000	.000	.000
IAEp2	.907	.000	.000	.000	.000	.000	.000	.000	.000
IAEp3	.812	.000	.000	.000	.000	.000	.000	.000	.000
IAEp4	.796	.000	.000	.000	.000	.000	.000	.000	.000
FCEp1	.000	.783	.000	.000	.000	.000	.000	.000	.000
FCEp2	.000	.837	.000	.000	.000	.000	.000	.000	.000
FCEp3	.000	.801	.000	.000	.000	.000	.000	.000	.000
FCEp4	.000	.880	.000	.000	.000	.000	.000	.000	.000
FCEp5	.000	.877	.000	.000	.000	.000	.000	.000	.000
Co1	.000	.000	.793	.000	.000	.881	.000	.000	.000
Co2	.000	.000	.812	.000	.000	.902	.000	.000	.000
Co3	.000	.000	.797	.000	.000	.886	.000	.000	.000

Question Items	IA	FC	SI	EE	PE	C	R	S	BI
Co4	.000	.000	.738	.000	.000	.820	.000	.000	.000
Re1	.000	.000	.635	.000	.000	.000	.739	.000	.000
Re2	.000	.000	.758	.000	.000	.000	.882	.000	.000
Re3	.000	.000	.761	.000	.000	.000	.885	.000	.000
Re4	.000	.000	.725	.000	.000	.000	.843	.000	.000
Sp1	.000	.000	.761	.000	.000	.000	.000	.855	.000
Sp2	.000	.000	.686	.000	.000	.000	.000	.771	.000
Sp3	.000	.000	.756	.000	.000	.000	.000	.849	.000
Sp4	.000	.000	.776	.000	.000	.000	.000	.872	.000
SIEp1	.000	.000	.635	.000	.000	.000	.000	.000	.000
SIEp2	.000	.000	.660	.000	.000	.000	.000	.000	.000
SIEp3	.000	.000	.719	.000	.000	.000	.000	.000	.000
SIEp4	.000	.000	.662	.000	.000	.000	.000	.000	.000
EEEp1	.000	.000	.000	.886	.000	.000	.000	.000	.000
EEEp2	.000	.000	.000	.902	.000	.000	.000	.000	.000
EEEp3	.000	.000	.000	.886	.000	.000	.000	.000	.000
EEEp4	.000	.000	.000	.796	.000	.000	.000	.000	.000
PEEp1	.000	.000	.000	.000	.854	.000	.000	.000	.000
PEEp2	.000	.000	.000	.000	.841	.000	.000	.000	.000
PEEp3	.000	.000	.000	.000	.843	.000	.000	.000	.000
PEEp4	.000	.000	.000	.000	.798	.000	.000	.000	.000

Question Items	IA	FC	SI	EE	PE	C	R	S	BI
BIep1	-.270	.000	.919	-.214	.289	-.057	-.184	-.133	.874
BIep2	-.275	.000	.937	-.219	.295	-.059	-.187	-.136	.892
BIep3	-.267	.000	.908	-.212	.286	-.057	-.182	-.131	.865
BIep4	-.262	.000	.892	-.208	.281	-.056	-.178	-.129	.849

BIep = Behavioural Intention towards e-payment; **Comm** = Communalism; **Sp** = Spirituality; **FCEp** = Facilitating Conditions for e-payment; **SIep** = Social Influence towards e-payment; **EEep** = Effort Expectancy by e-payment; **PEep** = Performance Expectancy from e-payment; **IAep** = Internet Access for e-payment; **R**= respect; **C** = Communalism; **S**=Spirituality; **FC** = Facilitating Conditions; **SI** = Social Influence; **EE** = Effort Expectancy; **PE** = Performance Expectancy; **IA** = Internet Access.

Like e-Filing, the factor loadings for e-payment question items were all significant. The question items for C, R and S were seen to also significantly load on SI in both the e-filing and e-payment models. This indicates their influence on SI which is further clarified in **Figure 9.8** in **Section 9.6.2.4** and **Figure 9.12** in **Section 9.6.4.1**.

9.5 Examining the AMfEE Model

The validity as well as reliability of individual constructs and that of entire model were confirmed at lower analytical levels using prescribed procedures. To improve model validity as well as reliability, modifications were performed resulting in dropping of some of the items whose loadings are below the threshold (Awang, 2012).

The overall model and the hypotheses were assessed using the SEM approach. **Section 9.5.1** describes SEM, as well as computed model fit indices.

9.5.1 SEM overview

Structural equation modelling blends measurement models as well as structural models. Measurement model for both latent exogenous and endogenous variables generates statistics that are checked against fitness parameters. If the fitness parameters are good, the structural model examines relationships among unobserved variables. The structural model was applied in examining the parameter estimates for statistical significance.

In order to conduct SEM, the first stage involved model specification prior to running it in AMOS 25.0. The next steps involved model identification, estimation, testing and modification to meet the pre-set goodness of fit criteria.

The specification of the model was anchored on theory presented in Chapter 6 as well as Chapters 2 and 3. The specified path model comprises latent variables, observed variables, unidirectional path, disturbance or error terms, and correlation between variables.

In the example shown in **Figure 9.1**, the observed variables EfPE1, EfPE2, EfPE3, and EfPE4 are effect indicators or items of the latent variable Performance Expectancy (PE). This being a reflective construct, direction of causality is from the latent variable to the items. The items are expected to be highly correlated since they are the effects of the same latent variable (Bollen, 1984). Dropping an item will not alter the meaning of the latent variable given that there are sufficient and similar functioning items to represent the latent variable (Awang, 2012).

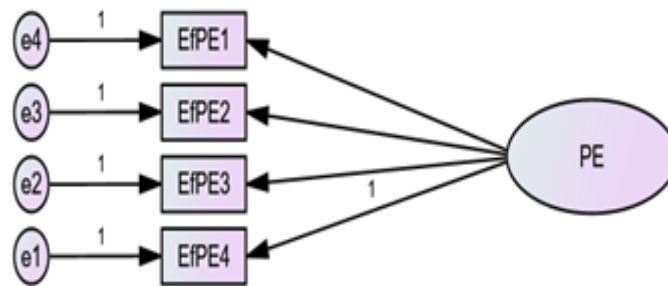


Figure 9.1: Example of SEM Model.

These items are basically interchangeable. Each item has a measurement error e to account for the unexplained variance.

The latent constructs PE and BI shown in the example in **Figure 9.2** are hypothesised to correlate with a correlation coefficient H . This implies that a change in PE results in a subsequent change in BI and vice versa.

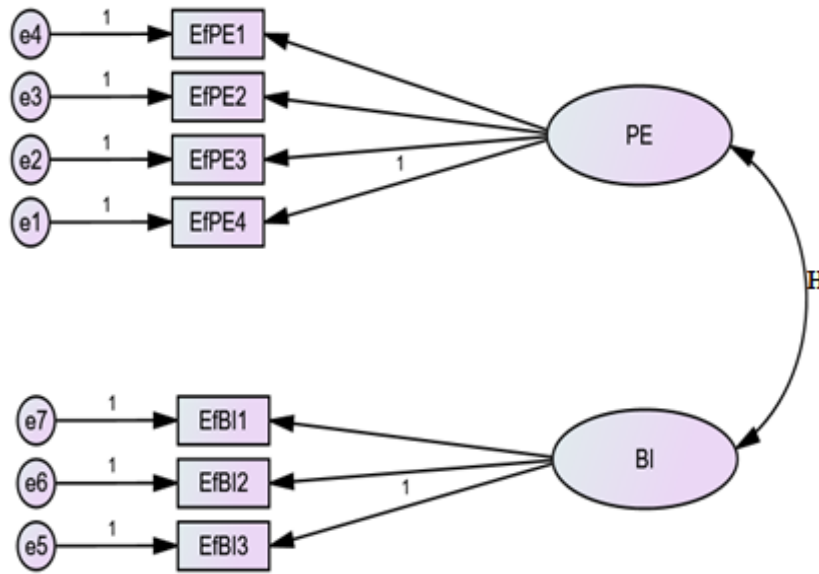


Figure 9.2: Example of SEM Model showing constructs correlation.

In the example shown in **Figure 9.3**, the causal latent construct SI has both direct and moderated effects on the endogenous variable e-Filing. The direct effect is denoted by the letter *c* while the moderated effect, *a*, is expressed through the resultant product of SI and moderator construct C (SIxC).

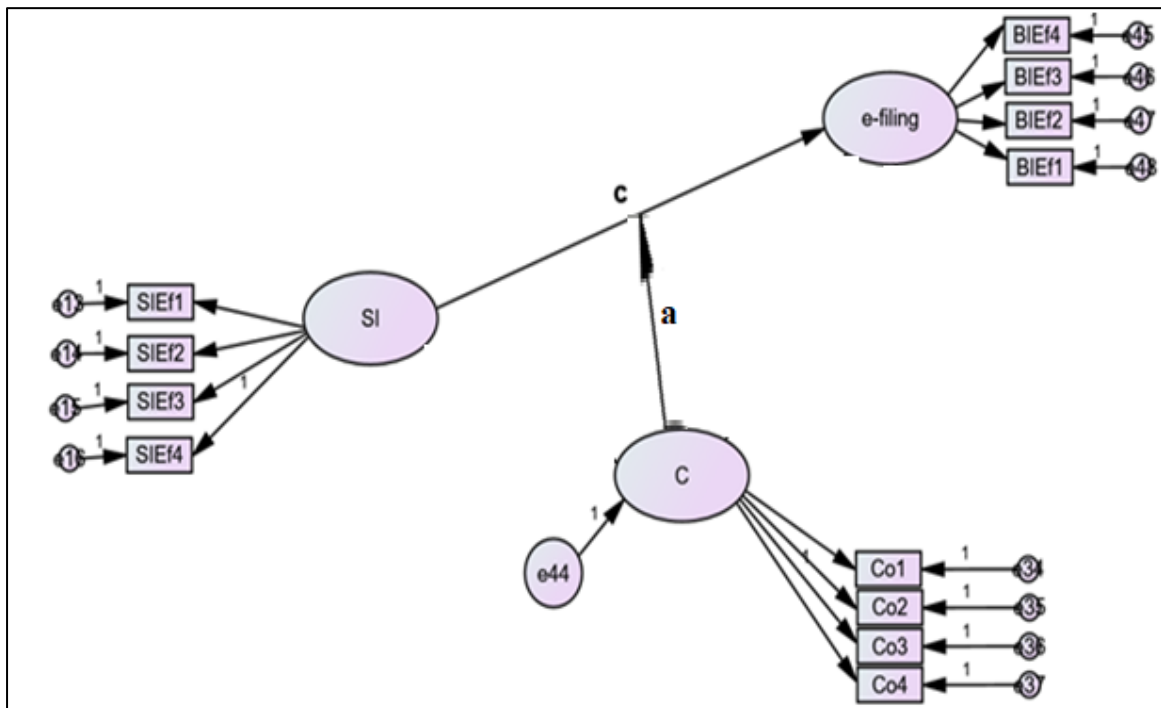


Figure 9.3: Example of SEM Model showing moderation by construct C.

This example shows that direct effects, although significant, could be affected through moderation by moderating agents. Conversely, a non-significant direct effect could be moderated into a significant effect.

The example shown in **Figure 9.4**, the predictor latent construct SI has both direct and indirect effects on the endogenous variable e-filing. The direct effect is denoted by the letter *c* while the indirect effect is expressed through the resultant product of *a* and *b* after mediation by the endogenous construct C.

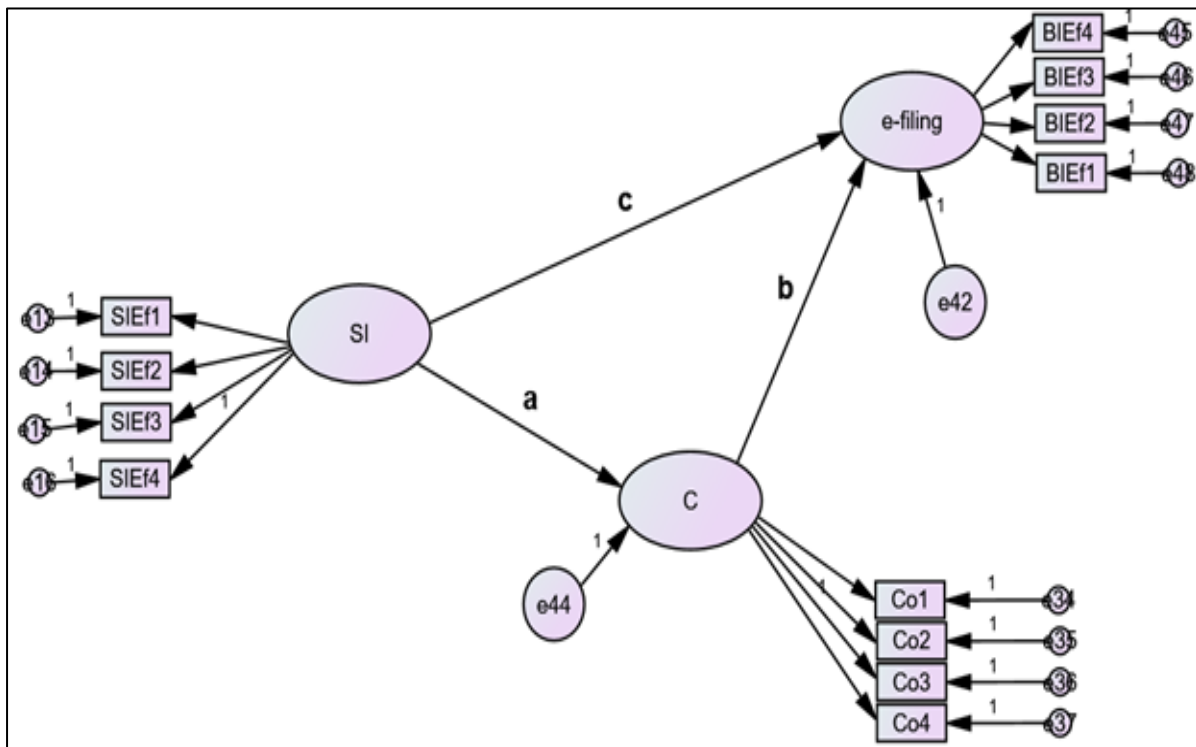


Figure 9.4: Example of SEM Model showing mediation by construct C.

This example illustrates that the reason for the direct effects could be explained by mediating agents. C can only be considered to be a mediator variable if the relationships $C \leftarrow SI$ and $e\text{-filing} \leftarrow C$ are both significant (Newsom, 2018).

Section 9.6 explores further the underlying hypothetical relationships of the designed SEM models.

9.6 Confirmatory Factor Analysis (CFA) of the Research Model

CFA was used to test the hypothesized theoretical measurement model. CFA determined that the hypothesized measurement model yielded a variance – covariance matrix similar to the sample variance -covariance matrix (Kline, 2015). CFA was adopted in this study since the

underpinning theory for the study is already established, UTAUT. The addition of IA to the model and inclusion of new moderators necessitated the use of Exploratory Factor Analysis (EFA). The analysis was done using the statistical Analysis of Moments Structure (AMOS) software version 25.0 with Maximum Likelihood (ML) estimation parameter to confirm the proposed relationships between constructs and also between their items.

The paths between the construct and items, and exogenous latent constructs and endogenous constructs were assessed using standardised loading coefficients. Where a CFA model resulted in a poor fit of the sample data, the proposed model was re-specified or modified and then re-estimated. The basic steps that were applied to run the CFA model are listed in **Table 9.7**.

Table 9.7: Steps followed in running the CFA (Awang, 2012).

Step	Description
1	Run the Confirmatory Factor Analysis (CFA) for the pooled measurement model
2	Examine the Fitness Indexes obtained for the measurement model
3	Compare with the required level in Table 8.7 . If the indexes obtained do not achieve the required level, then examine the factor loading for every item. Identify the item having low factor loading since these items are considered problematic in the model.
4	Delete an item having factor loading less than 0.6 (problematic item)
5	Delete one item at a time (select the lowest factor loading to delete first)
6	Run this new measurement model (the model after an item is deleted)
7	Examine the Fitness Indexes – repeat step 3-5 until fitness indexes are achieved.
8	If the Fitness Index is still not achieved after low factor loading items have been removed, look at the Modification Indices (MI)
9	High value of MI (above 20) indicates there are redundant items in the model (The MI indicate a pair of items which is redundant in the model)
10	<p>To solve the redundant items, we chose one of the following options:</p> <p>Option 1:</p> <ul style="list-style-type: none"> a. Delete one of the item (choose the lower factor loading) b. Run the measurement model and repeat the above steps <p>Option 2:</p> <ul style="list-style-type: none"> a. Set the pair of redundant item as “free parameter estimate” b. Run the measurement model and repeat the above steps
11	Obtain the Cronbach’s Alpha, CR, and AVE for every construct in the study
12	Report the fitness assessment for the remaining items of a construct in the study

The results obtained after running the steps in **Table 9.7** are presented in Section 9.6.1.

9.6.1 CFA at Individual Construct Level

The results of CFA at individual level shown in both **Table 9.8** and **Table 9.9** indicate inflated χ^2/df for most constructs in both the e-filing and e-payments scales. The inflated χ^2/df is consistent with prior research (Schermelleh-Engel and Müller, 2003) largely attributed to a sample size larger than 200 and fewer constructs and items. When such a situation occurs, Hair et. al. (2013) recommend that all the other fit indices be examined.

Table 9.8: Model fit measurements for individual constructs for the e-filing Scale (N=401).

Construct	χ^2/df (CMIN/df)	GFI >0.9	AGFI >0.8	CFI >0.9	IFI >0.9	SRMR <0.05
Internet Access (IA)	4.17	0.99	0.95	0.99	0.99	0.01
Performance Expectancy	8.05	0.98	0.90	0.99	0.99	0.01
Effort Expectancy (EE)	12.74	0.97	0.85	0.98	0.98	0.01
Social Influence (SI)	18.9	0.95	0.80	0.95	0.95	0.04
Facilitating Conditions (FC)	12.6	0.94	0.83	0.96	0.96	0.02
Behavioural Intention (BI)	16.7	0.96	0.80	0.98	0.98	0.02
Usage (U)	21.6	0.94	0.72	0.97	0.97	0.02
Spirituality (S)	23.2	0.94	0.72	0.96	0.96	0.04
Respect (R)	18.8	0.95	0.77	0.97	0.97	0.03

Construct	χ^2/df (CMIN/df)	GFI >0.9	AGFI >0.8	CFI >0.9	IFI >0.9	SRMR <0.05
Communalism (C)	9.4	0.98	0.89	0.99	0.99	0.02

N = Number of participants; χ^2 = Chi-square; df = degrees of freedom; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit; CFI = Comparative Fit Index; IFI = Incremental Fit Index; SRMR = Standardised Root Mean Square Residual.

Table 9.9: Model fit measurements for individual constructs for e-payment scale (N=401).

Construct	χ^2/df (CMIN/df) <5	GFI >0.9	AGFI >0.8	CFI >0.9	IFI >0.9	SRMR <0.05
Internet Access (IA)	34.3	0.92	0.60	0.94	0.94	0.04
Performance Expectancy (PE)	10.6	0.97	0.86	0.98	0.98	0.02
Effort Expectancy (EE)	7.7	0.98	0.91	0.99	0.99	0.01
Social Influence (SI)	6.3	0.98	0.92	0.99	0.99	0.02
Facilitating Conditions (FC)	9.1	0.96	0.87	0.97	0.97	0.02
Behavioural Intention (BI)	23.1	0.94	0.71	0.97	0.97	0.02
Usage (U)	30.5	0.93	0.63	0.95	0.95	0.02
Spirituality (S)	23.2	0.94	0.72	0.96	0.96	0.04
Respect (R)	18.8	0.95	0.77	0.97	0.97	0.03
Communalism (C)	9.4	0.98	0.89	0.99	0.99	0.02

For the e-filing scale in **Table 9.8**, only U, S and R had the AGFI marginally below the threshold level. Constructs in the e-payment scale, shown in **Table 9.9**, with an AGFI below the threshold included IA, BI, U, S, and R. For these and the rest of the constructs, GFI, CFI, IFI and SRMR are all above the acceptable threshold. The measurement results therefore

exhibit superior indicators. According to Nadi (2012b), the most important construct level CFA measure of fitness is the GFI indicator. Results show that all the constructs in both scales exhibit superior GFI. As a consequence, neither constructs nor items were dropped at this stage. They were all deemed to fulfill acceptable criteria for convergent and discriminant validity paving way for analysis of the entire model in Section 9.6.2

9.6.2 CFA for AMfEE Model -e-Filing

9.6.2.1 Assessing Moderation for E-filing Model

The moderating effect on the predictor variable is measured using the p value of the interactive variable, Int_1, which also shows the direction of moderation. The construct “culture” in **Figure 9.5** is substituted for specific indigenous African cultural constructs **Spirituality (S)**, **African Communalism (C)** and **Respect (R)**. The results of the moderation assessment are presented in **Sections 9.6.2.1.1, 9.6.2.1.2. and 9.6.2.1.3.**

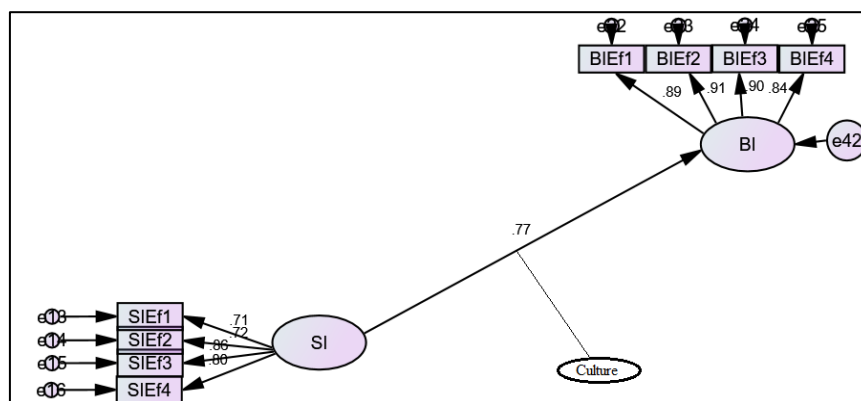


Figure 9.5: Moderation of culture on the influence of SI on BI towards e-filing.

9.6.2.1.1 Spirituality

The moderating effect of spirituality on the relationship $SI \rightarrow BI$ was assessed. **Figure 9.5** and its associated regression weights reflected in **Table 9.10** show that the p value of *** for this relationship, which tests hypothesis H_{4a} , is significant. In short, SI influences BI to use digital government services. The extent to which spirituality moderates this relationship was empirically examined using Model 1 of Hayes’ PROCESS macro in SPSS 26.0.

Hayes Process Macro Model:

Model 1

Outcome or dependent variable Y:	BIEf
Independent variable or focal predictor X:	SIEf
Moderator variable W:	S
Interactive variable Int_1:	(X*W)
Lower Limit Confidence Interval	LLCI
Upper Limit Confidence Interval	ULCI

Table 9.10: Hayes process macro results for model 1 – moderation of spirituality

	Coeff	se	p	t	LLCI	ULCI
Constant (a)	2.2108	.6038	.0003	3.6612	1.0236	3.3979
S	-.1293	.1684	.4431	-.7678	-.4605	2018
Int_1	.1020	.0392	.0097	2.5989	.0248	.1791

Model Summary

R	R-sq	MSE	F	df1	df2	p
.7644	.5843	.2552	185.9857	3.0000	397.0000	.0000

Overall model = $F(3,397) = 185.98$, $R^2 = .58$ **p < .001** Int_1(b) = .102 $t(397) = 2.599$ $p = .01$ shows positive significant results at the level of confidence of 95% for all confidence intervals in the output.

The Conditional effects of the focal predictor at values of the moderator(s) were:

S	Effect	se	t	p	LLCI	ULCI
3.0000	.4719	.0506	9.3237	.0000	.3724	.5714
4.0000	.5739	.0462	12.4251	.0000	.4831	.6647 (Average)
5.0000	.6759	.0692	9.7712	.0000	.5399	.8119

Interpretation

At low levels of *S*, $SIEfb = .472, t(397) = 9.32, p < .01$; this result shows that Social Influence accounts for 47% in the intention to use the e-filing service of digital government.

At average levels of *S*, $SIEfb = .574, t(397) = 12.4, p < .01$; this result shows that Social Influence accounts for 57% in the intention to use e-filing service of digital government.

At high levels of *S*, $SIEfb = .676, t(397) = 9.77, p < .01$; the result shows that Social Influence accounts for 68% in the intention to use e-filing service of digital government.

The model results show that spirituality can have a significant moderating influence on the relationship between Social Influence and Behavioural Intention to use e-filing if its levels were increased. However, the current level (coefficient) of spirituality, -.1293, although insignificant in itself, is tending in the negative direction, meaning that its moderating effect is negative.

9.6.2.1.2 Communalism

As stated in 9.6.2.1., the key variable that indicates interaction or moderation is the interaction variable, *Int_1*. In this section and the next sections, we will evaluate the result of the interaction term. The output below shows a significant result at 95% confidence level for all confidence intervals.

	coeff	se	t	p	LLCI	ULCI
Int_1	.0964	.0384	2.5128	.0124	.0210	.1718

Like spirituality, the current level (coefficient) of communalism, -.0502, is tending in the negative direction, meaning that its moderating effect, though significant, is negative.

9.6.2.1.3 Respect

The output below shows a significant result at 95% confidence level for all confidence intervals.

	coeff	se	t	p	LLCI	ULCI
Int_1	.0876	.0427	2.0522	.0408	.0037	.1715

Like communalism, the current level (coefficient) of respect for elders and authority, -.0646, is tending in the negative direction, meaning that its moderating effect, though significant, is also negative.

9.6.2.2 Mediation for E-filing Model

Indigenous African culture is both a moderator and a mediator. Having assessed its moderating effect, this section examines its mediating effect. Specifically, the mediating influence of S, C and R was examined.

AMfEE, presented in **Figure 9.6** was used to examine the influence of IA and UTAUT constructs on the intention to perform e-filing of tax returns and other digital government services such as pension and company registration.

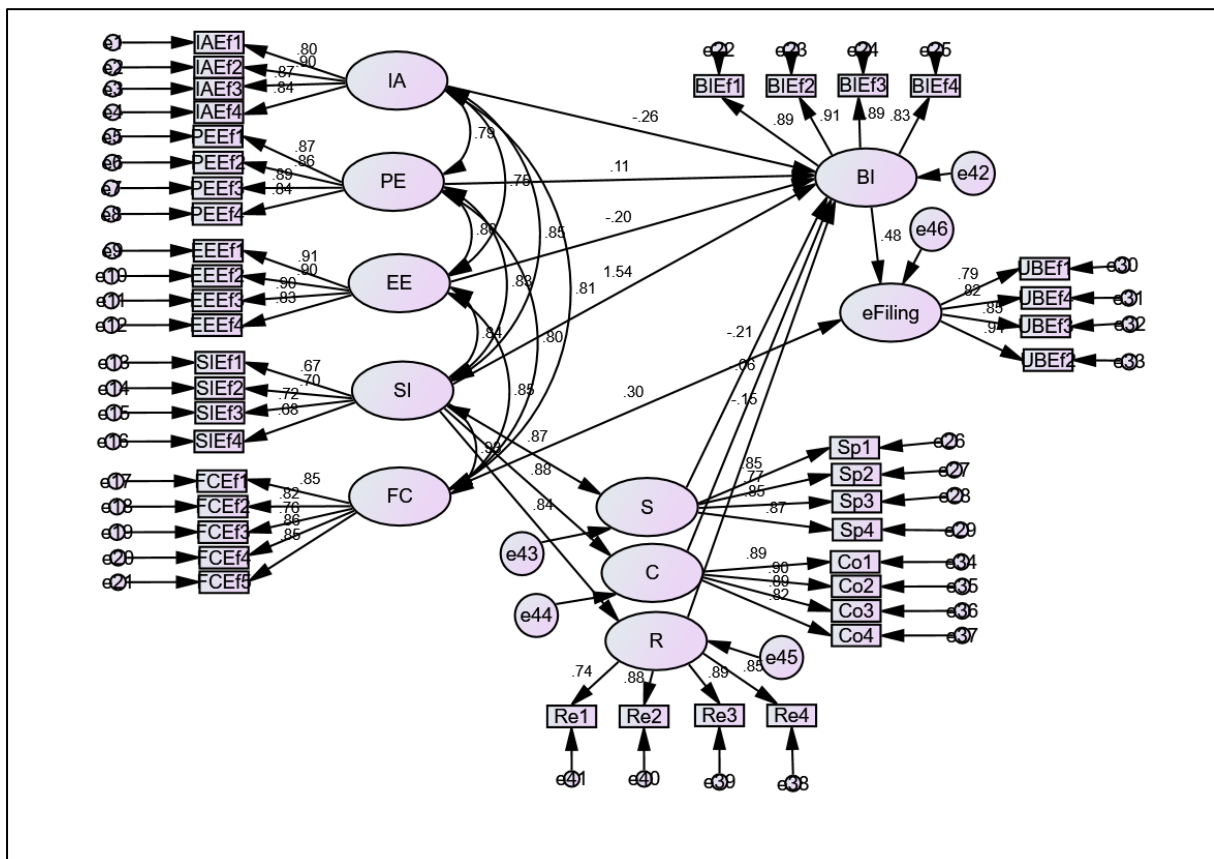


Figure 9.6: The e-filing Model with Mediation of cultural constructs.

N = 401; $\chi^2 = 2555.164$; df = 757; CMIN/DF = 3.375; GFI = .721; AGFI = .683; CFI = .891; IFI = .892; RMR = .045; RMSEA = .077; P = .000.

Figure 9.6 shows that the CMIN/DF index for the e-filing model meets the minimum acceptable threshold of less than 5. However, the GFI and AGFI are both below the acceptable or tolerable threshold of 0.8. CFI, IFI, RMR, RMSEA and P met the minimum acceptable threshold. The rest of the results are analysed in

Table 9.11.

Table 9.11: Results of the CFA of AMfEE Model- e-Filing.

Item	Loading	CR	P	Constructs' Correlations	
Internet Access					
IAEf1	0.80	19.18	***	Other Correlations between IA and other constructs are taken care of below	
IAEf2	0.90	21.06	***		
IAEf3	0.87	20.05	***		
IAEf4	0.84	19.17	***		
Performance Expectancy					
PEEf1	0.87	24.34	***	PE \leftrightarrow IA	0.79
PEEf2	0.86	23.69	***	PE \leftrightarrow EE	0.80
PEEf3	0.89	22.79	***	PE \leftrightarrow SI	0.83
PEEf4	0.84	22.78	***	PE \leftrightarrow FC	0.80
Effort Expectancy					
EEEf1	0.91	23.85	***	EE \leftrightarrow IA	0.75
EEEf2	0.90	28.87	***	EE \leftrightarrow SI	0.84
EEEf3	0.90	28.91	***	EE \leftrightarrow FC	0.84
EEEf4	0.83	23.85	***		

Item	Loading	CR	P	Constructs' Correlations	
Social Influence					
SIEf1	0.66	12.55	***	SI←→IA	0.85
SIEf2	0.70	13.11	***		
SIEf3	0.72	13.48	***	SI←→FC	0.93
SIEf4	0.68	12.59	***		
Facilitating Conditions					
FCEf1	0.85	20.76	***	FC←→IA	0.81
FCEf2	0.82	20.49	***		
FCEf3	0.76	17.63	***		
FCEf4	0.86	20.93	***		
FCEf5	0.85	20.48	***		
BI- e-Filing					
BIEf1	0.89	27.81	***	This is an endogenous variable, not affected by exogenous correlations.	
BIEf2	0.91	23.85	***		
BIEf3	0.89	28.14	***		
BIEf4	0.84	23.98	***		
Usage Behaviour					
UBEf1	.79	21.89	***		
UBEf2	.94	23.97	***		
UBEf3	.85	25.64	***		

Item	Loading	CR	P	Constructs' Correlations	
UBEf4	.82	23.97	***		
Spirituality					
Sp1	0.85	21.59	***	This is an endogenous variable which is a moderator, not affected by exogenous correlations.	
Sp2	0.77	18.32	***		
Sp3	0.85	22.42	***		
Sp4	0.87	22.39	***		
Communalism					
Co1	0.89	25.55	***	This is an endogenous variable which is a moderator, not affected by exogenous correlations.	
Co2	0.90	26.61	***		
Co3	0.89	21.71	***		
Co4	0.82	21.72	***		
Respect					
Re1	0.74	17.78	***	This is an endogenous variable which is a moderator, not affected by exogenous correlations.	
Re2	0.88	22.36	***		
Re3	0.89	24.50	***		
Re4	0.85	22.36	***		

The CFA results above demonstrate that unidirectionality was achieved since all measuring items have factor loadings for their respective latent constructs greater than 0.6. Newly developed items for constructs spirituality, respect, communalism and Internet Access had factor loadings greater than 0.5 while the established items for UTAUT constructs had factor loadings greater than 0.6 (Awang, 2012).

Table 9.11 shows that the thresholds have been met. This implies that there are no feedback loops among variables in the model and therefore over 60% of the variance of each latent variable is attributed to each item.

Table 9.11 also shows that there are ten correlations between exogenous constructs; PE□□IA, PE□□EE, PE□□SI, PE□□FC, EE□□IA, EE□□SI, EE□□FC, SI□□IA, SI□□FC, FC□□IA. Except for SI□□FC, all correlation coefficients do not exceed 0.85, demonstrating discriminant validity (Awang, 2012). SI□□FC has a correlation coefficient of 0.93, which could mean that the two exogenous constructs are redundant or have multicollinearity problem. This problem was resolved by dropping redundant items during model modification. As stated earlier, the model needed to be improved through model modification using the modification indices (MI) in Appendix II. MIs were used to perform modifications because all the factor loadings were above 0.6 (Awang, 2012).

9.6.2.3 Modified e-Filing Model

The model indices for the modified e-filing model presented in **Figure 9.7** meet the minimum parsimony requirements. The CMIN/DF was found to be 2.338, the GFI was .904, AGFI was .875, CFI was .964, IFI was .964, RMR was .028, RMSEA was .058 and p value was .000. The modification also resolved the possible multicollinearity problem observed between SI and FC in Section 9.6.2.

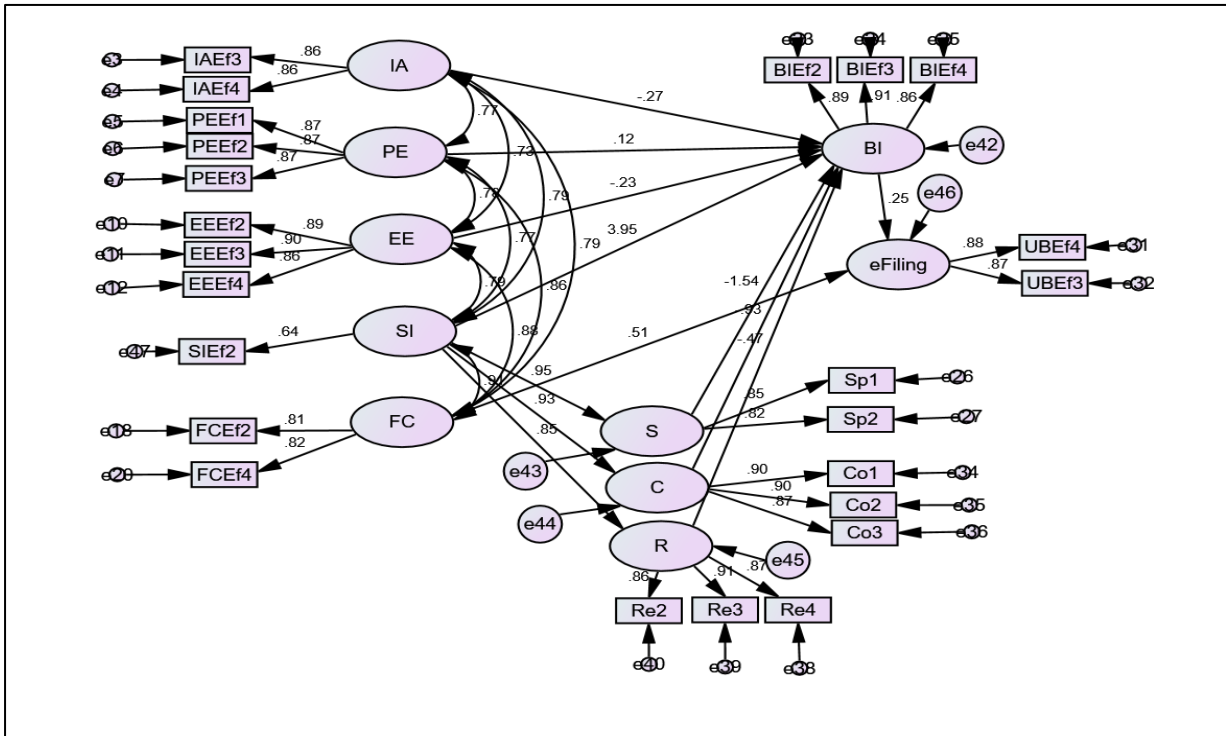


Figure 9.7: Modified e-filing Model.

N = 401; $\chi^2 = 537.671$; df = 230; CMIN/DF = 2.338; GFI = .904; AGFI = .875; CFI = .964; IFI = .964; RMR = .028; RMSEA = .058; P = .000.

9.6.2.4 Assessing Causal Mediation for e-Filing

The CMIN/DF ratio of 3.103 for the extracted sub model assessing causal mediation, presented in **Figure 9.8**, meets model parsimony requirements. The GFI of .903, AGFI of .868, CFI of .960, IFI of .960, RMR of .031 and RMSEA of .073 all met the appropriate distributional assumptions. The p value presented in **Table 9.12** was also significant confirming validity of the model.

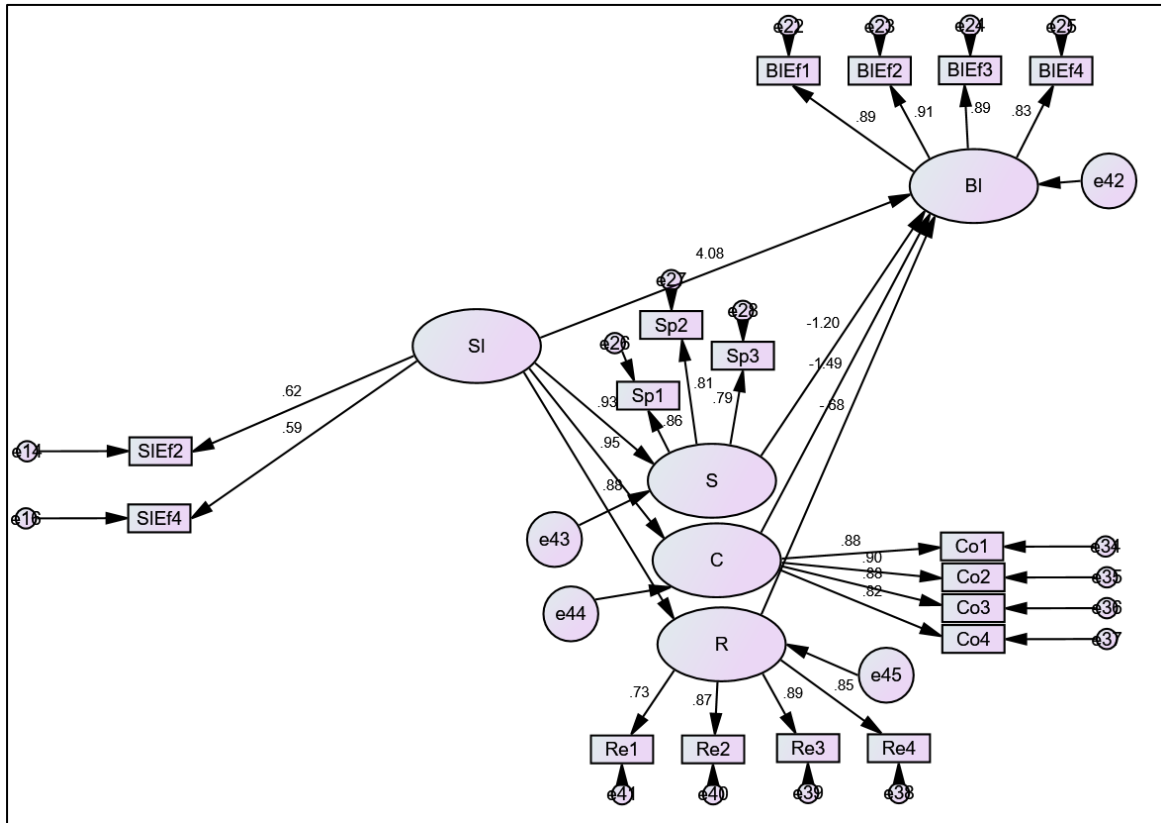


Figure 9.8: Mediation of S, C, and R for e-filing model.

N = 401; $\chi^2 = 347.519$; df = 112; CMIN/DF = 3.103; GFI = .903; AGFI = .868; CFI = .960; IFI = .960; RMR = .031; RMSEA = .073; P = .000.

Table 9.12: Mediating effects of S, C and R on Intention to e-File.

Relationship		S.E.	C.R.	P	Supported
BI	<--- SI	1.577	4.400	***	YES
S	<--- SI	.148	11.902	***	YES
R	<--- SI	.135	12.334	***	YES
C	<--- SI	.136	12.910	***	YES
BI	<--- S	.375	-2.881	.004	YES
BI	<--- C	.494	-2.757	.006	YES
BI	<--- R	.175	-3.490	***	YES

The results show that the **C.R.** is either greater than 1.96 or less than -1.96, which indicates a two-sided significance at the 5% level, thus demonstrating standard normal distribution. **Table 9.12** also shows that the relationships $SI \rightarrow BI$, $SI \rightarrow S$, $SI \rightarrow R$, $SI \rightarrow C$, $S \rightarrow BI$, $C \rightarrow BI$, and $R \rightarrow BI$ are all significant and fully supported, demonstrating that spirituality, African communalism and respect for authority and elders are mediators.

9.6.3 CFA for AMfEE – e-Payment

9.6.3.1 Assessing Moderation for e-Payment Model

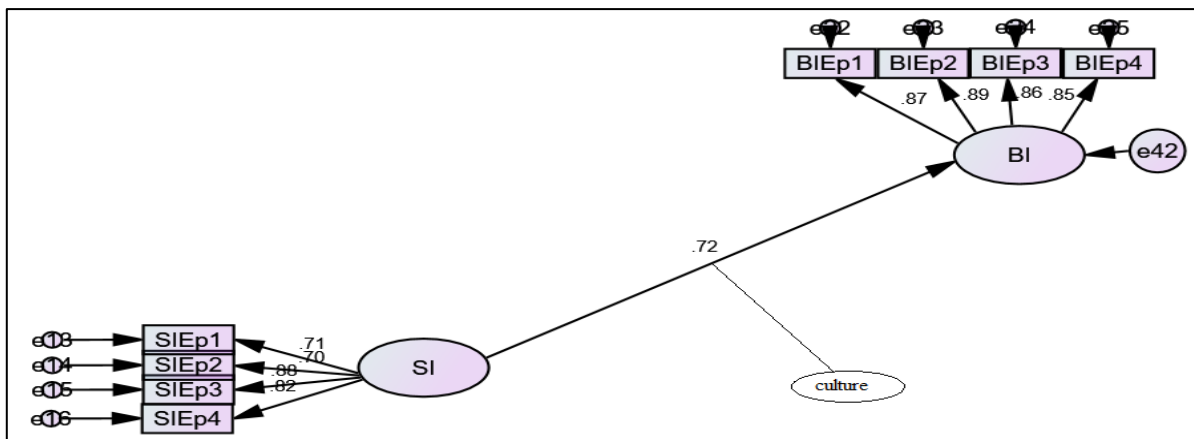


Figure 9.9: Moderation of Indigenous African Culture on $SI \rightarrow BI$ Relationship for e-Payment.

Similar to the e-filing model, the moderating effect of indigenous African culture on the relationship between SI and BI was examined in the e-payment model. Each indigenous African cultural construct was evaluated as follows:

		coeff	se	t	p	LLCI	ULCI
S	Int_1	.0787	.0412	1.9074	.0572	-.0024	.1598
C	Int_1	.0695	.0420	1.6565	.0984	-.0130	.1521
R	Int_1	.0914	.0471	1.9403	.0530	-.0012	.1840

The output shows that the effect of moderation by indigenous culture on the relationship between social influence and intention to adopt or use e-payment at a confidence level of 95%

for all confidence intervals is not significant. This is because for all cultural constructs, there is a zero term between LLCI and ULCI.

We can thus deduce that indigenous African culture does not play a significant moderating role in the use or adoption of e-payment services. This position is also supported by the demographic data in **Chapter 8, Table 8.3**, which shows that while only 61% of respondents were comfortable using the e-filing service, 96% were comfortable using the e-payment service.

9.6.3.2 Assessing Mediation for E-Payment Model

Like e-filing, the direct effects of IA and EE on intention to perform e-Payment were negative while those of PE and SI were positive. **Figure 9.10** shows that CMIN/DF, CFI, IFI, RMR, RMSEA and P have all met the minimum acceptable threshold as outlined in **Chapter 8**.

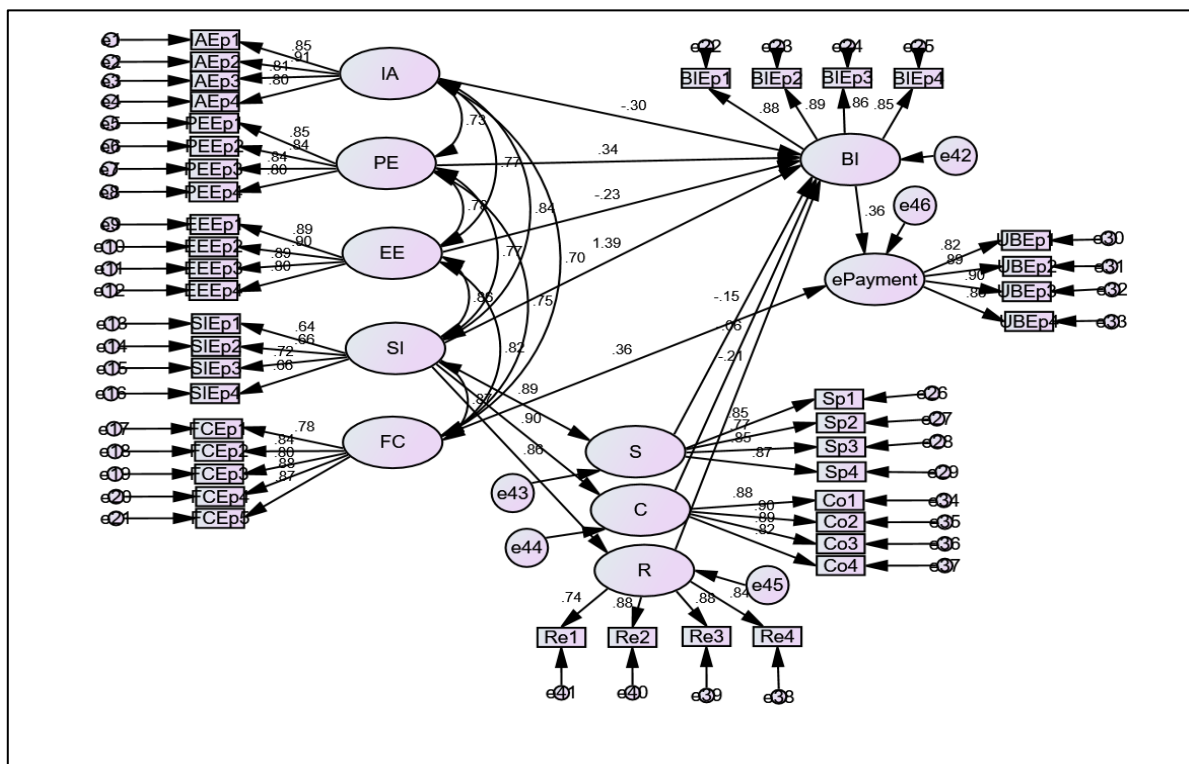


Figure 9.10: The e-Payment Model

N= 401; $\chi^2= 2470.571$; $df=757$; CMIN/DF = 3.264; GFI= .726; AGFI= .688; CFI= .891; IFI= .892; RMR= .041; RMSEA = .075; P = .000.

However, like in the e-filing model, GFI and AGFI did not meet the minimum threshold. To attain model parsimony, model modification was performed in accordance with the procedure

outlined in **Table 9.7**. Like the e-filing model, factor loadings for e-payment model were all above 0.6 and therefore MIs were used to perform model modifications.

As shown on **Table 9.13**, the CFA for e-Payment demonstrates that the unidirectionality measure was achieved. The factor loadings for all latent constructs were above 0.6, demonstrating convergent validity. The correlation coefficients largely depict discriminant validity.

Table 9.13: Results of the CFA of AMfEE Model - e-payment.

Item	Loading	CR	P	Constructs' correlations	
Internet Access					
IAEp1	0.85	23.72	***	Other Correlations between IA and other constructs are taken care of below	
IAEp2	0.91	19.83	***		
IAEp3	0.81	19.23	***		
IAEp4	0.80	19.23	***		
Performance Expectancy					
PEEp1	0.85	21.10	***	PE \leftrightarrow IA	0.73
PEEp2	0.84	20.59	***	PE \leftrightarrow EE	0.78
PEEp3	0.84	21.11	***	PE \leftrightarrow SI	0.77
PEEp4	0.80	18.99	***	PE \leftrightarrow FC	0.75
Effort Expectancy					
EEEp1	0.89	26.68	***	EE \leftrightarrow IA	0.77
EEEp2	0.90	25.69	***	EE \leftrightarrow SI	0.85
EEEp3	0.89	20.82	***		
EEEp4	0.80	20.83	***	EE \leftrightarrow FC	0.81

Item	Loading	CR	P	Constructs' correlations	
Social Influence					
SIep1	0.64	11.75	***	SI \leftrightarrow IA	0.84
SIep2	0.66	12.16	***		
SIep3	0.72	13.12	***		SI \leftrightarrow FC
SIep4	0.66	11.78	***		
Facilitating Conditions					
FCEp1	0.78	18.63	***	FC \leftrightarrow IA	0.69
FCEp2	0.84	22.38	***		
FCEp3	0.80	19.29	***		
FCEp4	0.88	22.44	***		
FCEp5	0.88	22.32	***		
Behavioural Intention					
BIep1	0.88	25.19	***	This is an endogenous variable, not affected by exogenous correlations.	
BIep2	0.89	23.55	***		
BIep3	0.86	24.29	***		
BIep4	0.85	23.55	***		
Usage Behaviour					
UBep1	0.82	20.75	***		

Item	Loading	CR	P	Constructs' correlations	
UBEp2	0.89	23.99	***	This is an endogenous variable, not affected by exogenous correlations.	
UBEp3	0.90	24.48	***		
UBEp4	0.86	20.75	***		
Spirituality					
Sp1	0.86	21.61	***	This is an endogenous variable, not affected by exogenous correlations.	
Sp2	0.77	18.33	***		
Sp3	0.85	21.61	***		
Sp4	0.87	24.41	***		
Communalism					
Co1	0.88	25.40	***	This is an endogenous variable, not affected by exogenous correlations.	
Co2	0.90	26.74	***		
Co3	0.87	21.99	***		
Co4	0.82	22.00	***		
Respect					
Re1	0.74	17.94	***	This is an endogenous variable, not affected by exogenous correlations.	
Re2	0.88	22.52	***		
Re3	0.89	24.65	***		

Item	Loading	CR	P	Constructs' correlations	
Re4	0.84	22.52	***		

9.6.4 Modified e-Payment Model

The model modifications for the e-payment model were conducted using the modification indices reflected in **Appendix III**. The model indices for the modified e-payment model met the minimum parsimony requirements.

The CMIN/DF ratio was of 2.233 was within the acceptable ratio of less than 5. The GFI of .900 is very good although some scholars desire a measure greater than .95 (Kline, 2015). The AGFI of .869 is acceptable. The CFI of .965 is excellent. The IFI of .966 is also excellent. The RMR of .029 is good since it is less than the set value of .04. RMSEA of .056 is also excellent since it is less than .08. The p value of .000 shows that the model parameters are all significant and thus make inferences from the model credible.

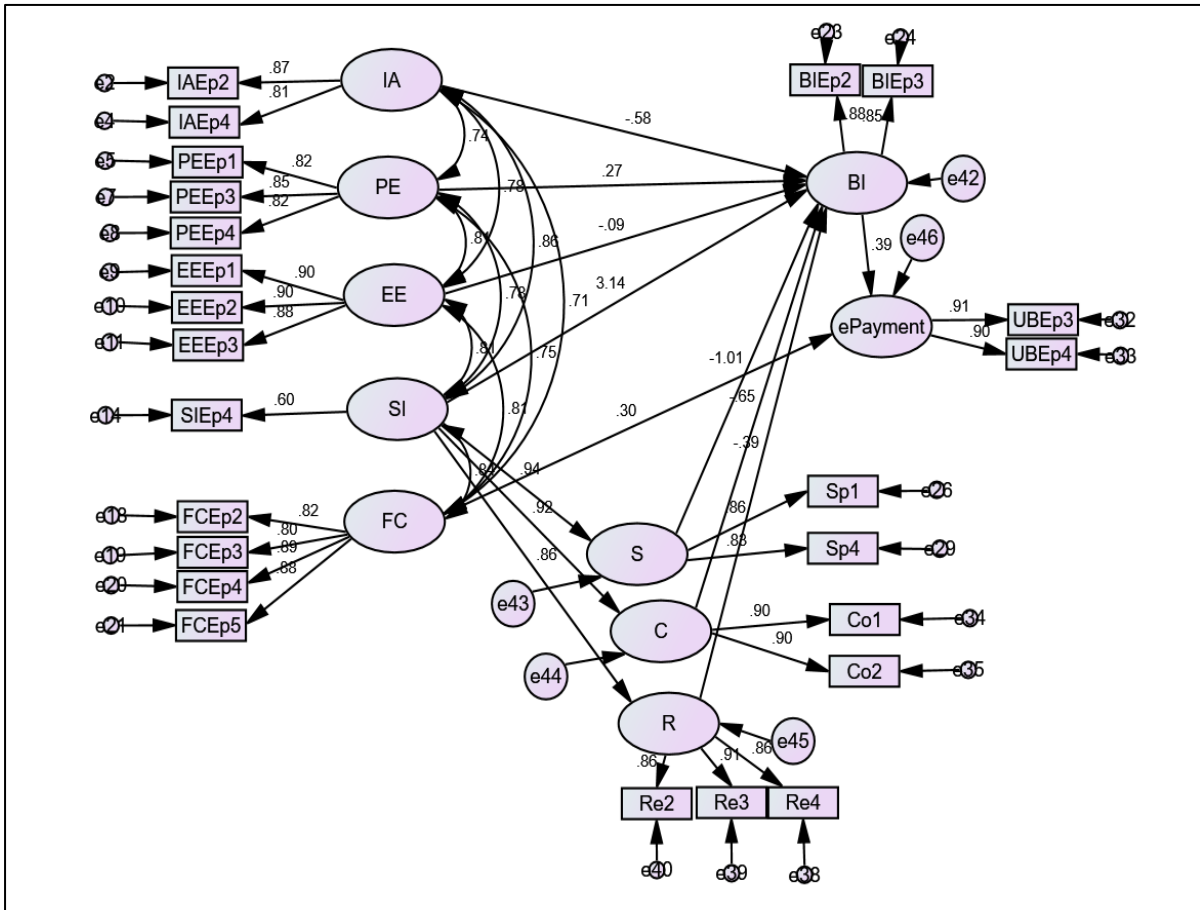


Figure 9.11: Modified e-Payment Model.

N = 401; $\chi^2 = 513.629.671$; df = 230; CMIN/DF = 2.233; GFI = .900; AGFI = .869; CFI = .965; IFI = .966; RMR = .029; RMSEA = .056; P = .000.

Since this study also has specific interest in understanding the mediating influence of S, C and R, a sub model for causal mediation was extracted and analysed in Section 9.5.4.1.

9.6.4.1 Assessing Causal Mediation for e-Payment

The CMIN/DF ratio of 3.242 for the extracted sub model assessing causal mediation meets model parsimony requirements. The GFI of .915, AGFI of .878, CFI of .963, IFI of .963, RMR of .026 and RMSEA of .075 all met the minimum requirements. The p value of *** reflected in **Table 9.14** was also significant.

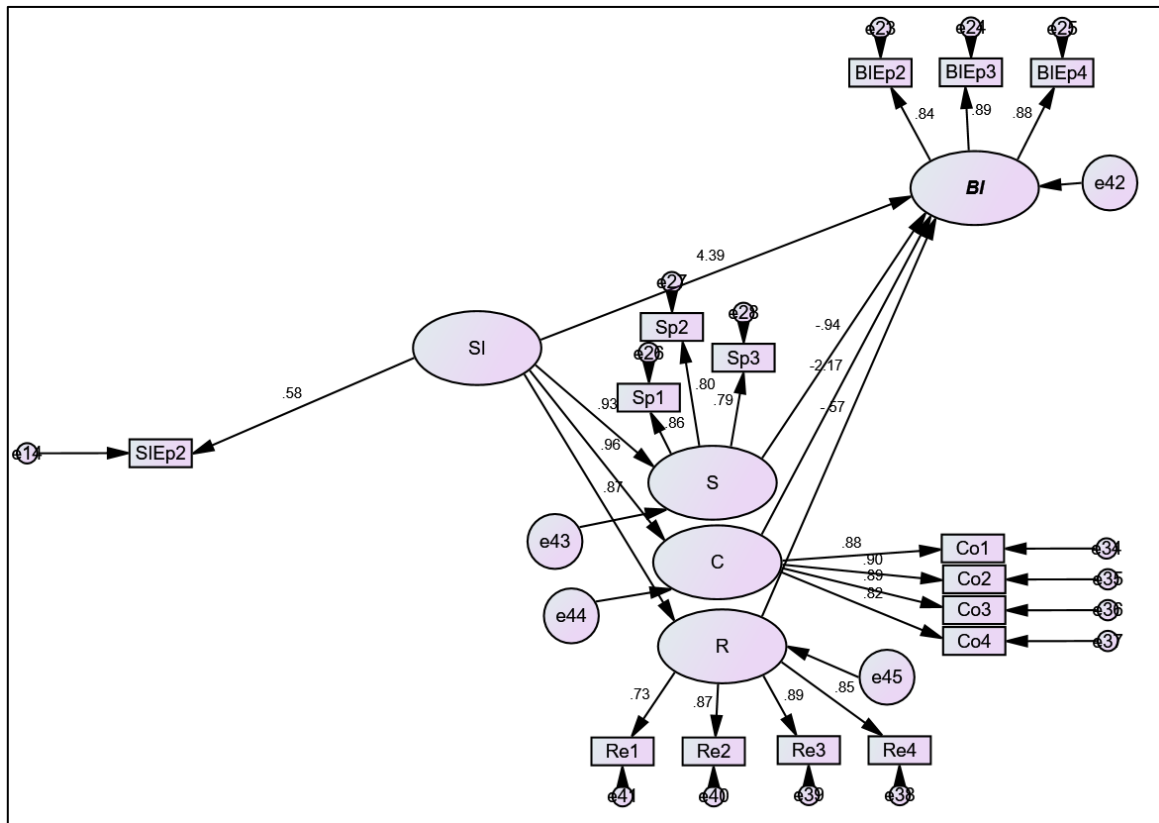


Figure 9.12: Mediation of S, C and R on BI for e-Payment.

N = 401; $\chi^2 = 269.093$; df = 83; CMIN/DF = 3.242; GFI = .915; AGFI = .878; CFI = .963; IFI = .963; RMR = .026; RMSEA = .075; P = .000.

Table 9.14: Mediation effects of S, C, and R on e-Payment.

	Relationship		S.E	C.R.	p
1	BI	<--- SI	1.920	2.799	.005
2	S	<--- SI	.134	11.415	***
3	R	<--- SI	.122	11.727	***
4	C	<--- SI	.126	12.308	***
5	BI	<--- S	.354	-1.965	.049
6	BI	<--- C	.797	-2.056	.040

	Relationship			S.E	C.R.	p
7	BI	<---	R	.183	-2.330	.020

Like causal mediation in the e-filing model, the results of causal mediation in the e-payment model showed that the **C.R.** was either greater than 1.96 or less than -1.96 , thus indicating a two-sided significance at the 5% level. As stated earlier, this demonstrates a standard normal distribution.

Table 9.14 also shows that the relationships $SI \rightarrow BI$, $SI \rightarrow S$, $SI \rightarrow R$, $SI \rightarrow C$, $S \rightarrow BI$, $C \rightarrow BI$, and $R \rightarrow BI$ are all significant and fully supported. The direction of causality for some of them was different from what was hypothesized as shown in **Table 9.16**. The relationships 2-7 show that S, C and R are all significant mediators.

9.7 Evaluation of the Overall Research Model

The overall research model is evaluated using the hypotheses defined earlier and outlined in **Table 9.15**.

Table 9.15: Evaluated Hypotheses.

Code	Hypothesis
BIef←IA	IA positively affects SMEs' BI to use e-filing services in Zambia
BIep←IA	IA positively affects SMEs' BI to use e-Payment services in Zambia
BIef←PE	PE positively affects SMEs' BI to use e-filing services in Zambia
BIep←PE	PE positively affects SMEs' BI to use e-Payment services in Zambia
BIef←EE	EE positively affects SMEs' BI to use e-filing services in Zambia
BIep←EE	EE positively affects SMEs' BI to use e-Payment services in Zambia
BIef←SI	SI positively affects SMEs' BI to use e-filing services in Zambia
BIep←SI	SI positively affects SMEs' BI to use e-Payment services in Zambia

Code	Hypothesis
C←SI BIef←C	The positive influence of SI on BI to use e-filing services is moderated by communalism
S←SI BIef←S	The positive influence of SI on BI to use e-filing services is moderated by Spirituality
R←SI BIef←R	The positive influence of SI on BI to use e-filing services is moderated by Respect
C←SI BIep←C	The positive influence of SI on BI to use e-Payment services is moderated by communalism
S←SI BIep←S	The positive influence of SI on BI to use e-Payment services is moderated by Spirituality
R←SI BIep←R	The positive influence of SI on BI to use e-Payment services is moderated by Respect
USEef←FC	FC will have a positive influence on usage behaviour for the e-filing service
USEep←FC	FC will have a positive influence on usage behaviour for the e-Payment service
USEef←BI	BI positively influences usage behaviour of e-filing service
USEep←BI	BI positively influences usage behaviour of e-Payment service

The decision to accept the hypotheses was arrived at by considering the following key aspects:

- its critical ratio (CR)/t-value for the standardized regression weight should be greater than 1.96;
- its significance value should be, p-value < 0.05; and
- the proposed direction of the relationship between constructs should be in the predicted direction i.e. positive/negative

The estimates of the structural model and hypotheses are presented in **Table 9.16**.

Table 9.16: Parameter estimates for the structural models.

Hypothesis	SE	CR	P-Value	Significant?	Supported	Proposed direction?
Bl_{ef}←IA	0.096	-2.461	.014	YES	YES	NO
Bl_{ep}←IA	0.127	-3.922	***	YES	YES	NO
Bl_{ef}←PE	0.108	1.894	.058	NO	NO	YES
Bl_{ep}←PE	0.092	3.516	***	YES	YES	YES
Bl_{ef}←EE	0.104	-2.234	0.026	YES	YES	NO
Bl_{ep}←EE	0.089	-0.177	0.859	NO	NO	NO
Bl_{ef}←SI	1.150	3.945	***	YES	YES	YES
Bl_{ep}←SI	0.734	3.297	***	YES	YES	YES
C←SI	0.095	14.215	***	YES	YES	YES
Bl_{ef}←C	0.253	-2.892	0.004	YES	YES	NO
S←SI	0.075	13.333	***	YES	YES	YES
Bl_{ef}←S	0.693	-2.395	0.017	YES	YES	NO
R←SI	0.091	13.094	***	YES	YES	YES
Bl_{ef}←R	0.121	-3.159	0.002	YES	YES	NO
C←SI	0.091	14.504	***	YES	YES	YES
Bl_{ep}←C	0.188	-2.083	0.037	YES	YES	NO

S←SI	0.098	14.173	***	YES	YES	YES
BIep←S	0.244	-1.660	0.049	YES	YES	NO
R←SI	0.087	13.341	***	YES	YES	YES
BIep←R	0.96	-1.978	0.048	YES	YES	NO
USEef←FC	0.096	5.757	***	YES	YES	YES
USEep←FC	0.079	3.873	***	YES	YES	YES
USEep←BI	0.092	4.637	***	YES	YES	YES
USEef ←BI	0.090	2.834	0.005	YES	YES	YES

9.8 Conclusion

This chapter evaluated both the moderating effect and mediating effect of indigenous cultural constructs of spirituality, communalism and respect on adoption of digital government. While the relationship between social influence and behavioural intention towards e-filing was positive and significant, results showed that the interaction effects of the predictor (social influence) and the moderators produced negative significant effect on this relationship. However, the effect was non-significant on the relationship between social influence and behavioural intention towards e-payment.

For mediation, the results discussed in this chapter also show that the impact of Social Influence on behavioural intention towards use of e-filing had a significant factor of 4.08. The mediating influence of spirituality, communalism and respect produced a negative resultant effect on the intention to use the e-filing service. The impact of Social Influence on Intention to use e-Payment was also very significant resulting in a factor of 4.39. Like e-Filing, the mediating influence of spirituality, communalism and respect on SI to use e-payment services produced a negative resultant effect. The influence of IA on BI to use both the e-filing and e-payment services was also significant but negative.

Detailed discussions of these results are explained in Chapter 10.

CHAPTER 10

10. DISCUSSION

10.1 Introduction

This research adds to extant knowledge by bringing to the fore the impact of African culture as well as internet access on digital government adoption, in particular e-filing and e-payment services in low-income countries such as Zambia.

The primary research question for this study was

To what extent does indigenous African culture influence digital government adoption by SMEs in Zambia?

To add depth to this research, the primary research question was supported by secondary questions itemised below;

- a) To what extent does internet access influence digital government adoption in Zambia?
- b) How is indigenous African culture exhibited in Zambia?
- c) How does social influence impact digital government adoption, when moderated and mediated by indigenous African culture?

In answering research questions, the UTAUT model was used. The data was subjected to structural equations modelling using AMOS version 25.0 and SPSS version 26.0. Based on the questions as well as literature review, seven (7) hypotheses were established, and were empirically assessed for significance and direction of causality. The moderating and mediating effect of cultural values of spirituality, communalism and respect were tested on current association between social influence and intention to adopt e-filing and e-payment.

Both substantial and insignificant outcomes are deliberated in this chapter. The discourse addresses primary research question elucidating the influence of indigenous culture as well as internet access on digital government adoption.

10.2 Influence of Internet Access on Adoption of Digital Government Services

This section discusses significant outcomes associated with Secondary Research Question 1 and Hypothesis (H_1).

Secondary Research Question 1: To what extent does internet access influence digital government adoption in Zambia?

H₁: IA positively affects SMEs' BI to use e-filing and e-payment services in Zambia.

Internet access is an enabler for digital government adoption. Internet access in Zambia has been provided to all provincial headquarters which are connected by optic fibre. Further, Zambia has access through neighbouring countries to coastal undersea fibre cables that include SAT3 or SAFE, MaIN OnE, GLO-1, WACS, ACE, SAex, WASACE, SEAS, TEAMs, Seacom, Lion 2, Lion, EASSY, and BRICS. Due to these extensive ICT developments to the extent that countrywide deployment of optic fiber has been undertaken in Zambia covering all areas where this research was conducted and that mobile service providers reduced tariffs following government's provision of concessions and installation of microwave towers to enable universal access, it was assumed that internet access would positively influence intention to adopt digital government in Zambia. The results of the structural model revealed that internet access had a negative but significant influence on behavioral intention to use digital government services in Zambia. The relationships $BI_{ef} \leftarrow IA$ for e-filing and $BI_{ep} \leftarrow IA$ for e-Payment were both significant but the direction of causality was negative. This result reveals that internet access in Zambia is still perceived to be a hindrance or bottleneck to digital government adoption, especially for the small and micro enterprises. These findings call for a thorough review of internet access in Zambia with a view of developing regulations that enable attainment of universal access by all citizens especially SMEs for the purpose of digital government development and adoption. Internet access can also be seen as an important enabler for attaining the United Nation's Sustainable Development Goals number 8 (Decent work and economic growth) and number 10 (Reduced inequalities). Such a review would be useful in other low-income countries of similar social context.

10.3 Influence of Performance Expectancy on Adoption of Digital Government Services

This section discusses significant and non-significant findings associated with the following Hypothesis (H_2);

H₂: PE positively affects SMEs' BI to use e-filing and e-payment services in Zambia

The expectation that using an information system would improve one's performance is an enabler to adopting digital government services. On the contrary, the SEM structural assessment revealed that the relationship $BI_{ef} \leftarrow PE$ for e-filing was non-significant although the direction of causality was positive, consistent with the hypothesis. This is also consistent with the general perception of the Zambian SMEs, particularly those in the informal sector, who perceive the e-filing service to be complex. In recognition of this complexity, the Tax Authority has embarked on a project to implement a simplified mobile e-filing process for the informal sector. These results empirically validate the perceptions raised by taxpayers.

The relationship $BI_{ep} \leftarrow PE$ for e-Payment was however seen to be significant and the direction of causality was positive, also consistent with the hypothesis. This is consistent with the demographic results shown in Chapter 8, Table 8.2 which revealed that 95.5% of the respondents had experience in the use of the e-payment service. The finding also empirically supports the general notion that the e-payment service is much simpler to use than the e-filing service. Chapter 8, Table 8.2 shows that only 61.1% of the respondents had experience or were comfortable with using the e-filing service. Almost 40% of the respondents thought that the e-filing service did not improve their performance. This is a relatively large number of SMEs that government cannot afford to ignore.

10.4 Influence of Effort Expectancy on Adoption of Digital Government Services

This section discusses significant and non-significant findings associated with the following Hypothesis (*H₃*);

H₃: EE positively affects SMEs' BI to use e-filing and e-payment services in Zambia

Using a digital innovation is perceived to reduce the effort required to complete a task. In this vein, it was perceived that using the e-filing and e-payment services of digital government would reduce the effort required to complete tax filing of returns and actual payment compared to doing them manually. The SEM structural assessment revealed that the relationship $BI_{ef} \leftarrow EE$ for e-filing was significant. However, the direction of causality was negative, meaning that using the e-filing service was not perceived to reduce effort to complete the filing tasks. This empirically shows that the e-filing service is perceived to be complex. Complexity can be a hindrance to technology adoption (Oliveira and Martins, 2011) and thus retard the rate

of technological development. This raises the need to review the current processes and functionality of the e-filing service of the tax system in Zambia with a view to simplifying them. A detailed training programme for these SME taxpayers can help mitigate the perception of complexity.

On the contrary, the relationship $BI_{ep} \leftarrow EE$ was found to be non-significant. Like e-Filing, the direction of causality for e-payment was negative. This could be attributed to the number of stages in completing e-payment process for each tax return. The process involves registering a payment on the tax system and completing the actual payment either at a commercial bank or on a mobile payment platform. Unlike e-filing, e-payment has been in use for a relatively longer time for different services in Zambia. The non-significance of the relationship $BI_{ep} \leftarrow EE$ could be attributed to the extant knowledge among the taxpaying SME in Zambia.

10.5 Influence of Social Influence on Adoption of Digital Government Services

This section discusses significant findings associated with the Hypothesis H_4 .

H₄: SI positively affects SMEs' BI to use e-filing and e-Payment services in Zambia

In an African social context in general and Zambia in particular, social influence is driven by normative coercive forces in business, work environment or neighbourhoods where SME owners reside. Social Influence has strong effects in Zambia. This was exhibited by relationships $BI_{ef} \leftarrow SI$ and $BI_{ep} \leftarrow SI$, both of which were positively significant. The results show that Social Influence positively influences behavioral intention to use both the e-filing and e-payment services. The implication of this result is that government should target groups of SME owners and civic leaders to serve as change agents for the digital government development and adoption agenda while at the same time addressing the negative effects of moderators and mediators discussed in Chapter 9.

10.6 Moderating and Mediating Influence of Indigenous African Culture on Social Influence

Section 10.6 discusses significant findings associated with Secondary Research Questions 2 and 3 and Hypothesis H_{4a} .

Secondary Research question 2: How is indigenous African culture exhibited in Zambia?

Secondary Research question 3: How does social influence impact digital government adoption, when moderated and mediated by indigenous African culture?

H_{4a}: The positive influence of SI on BI to use e-filing and e-payment services is both i) moderated and ii) mediated by 1) spirituality, 2) African communalism, and 3) respect for elders and authority.

Indigenous culture in Zambia as illustrated in Chapter 2 Section 2.6 endorses spirituality, communalism and respect for elders and authority as key practises in Zambian tradition. These indigenous cultural constructs have moderating and mediating influence on the adoption of e-filing and e-payment services in Zambia. Their influence is shown by the hypothesis *H_{4a}* whose results are discussed below.

The results of the structural model assessment show that spirituality, communalism and respect for elders and authority are positive and significant moderators of intention to adopt e-Filing. The results are however insignificant for the e-payment service, which means that spirituality, communalism and respect for elders and authority encapsulated as indigenous culture does not moderate the relationship between social influence and intention to adopt e-payment. This result is supported by the high percentage points for those comfortable with the e-payment service.

The study has also revealed that the potential development brought about by the implementation of digital government services is mediated by strands of African culture, which are often ignored. The study has demonstrated the mediating effect of the three strands of African culture in Zambia namely spirituality, communalism and respect for authority and elders on the relationship between social influence and intention to adopt e-Filing. For the e-payment service, all the cultural constructs were seen to be significant negative mediators. These cultural strands are entrenched in communities and societies. For example, literature shows that 99.3% of Zambians (United States Department of State, 2016), 99.7% of Nigerians (Grim *et al.*, 2017), 83.6% of South Africans (Schoeman, 2017) and 99.2% of Tunisians (United States Department of State, 2011) practice some kind of spirituality; religious and normative belief system.

Social influence which gives rise to social coercion arising from communal formations especially in Zambian where most taxpaying SMEs reside in communal environments and also

their businesses are in communal environments brings to the fore effects of communalism, which have been found to negatively affect digital government adoption.

Zambia, like most low-income countries in Africa, has a strong culture of respect for authority and elders resulting in a social environment that potentially dictates the direction of behaviour for individuals. If people in positions of authority in the community and elders hold a certain view on a subject matter, such a view is likely to be adopted by subordinates. The results show that although social influence has a strong positive influence, the subordination of one's actions to high authorities and to elders implies that they cannot take the actions they intended to take. Such a behaviour does not promote development and can retard progress as the case has been with digital government adoption in Zambia.

Chapter 9, Table 9.16 shows that social influence had a significant and positive influence on the behavioural intention to use both e-filing and e-payment. This influence was negated by the African cultural constructs of spirituality, communalism and respect, which previously were assumed to be positive moderators and mediators. These findings help policy makers to incorporate policies that address cultural issues during digital government implementation and adoption.

10.7 Influence of Facilitating Conditions on Usage of Digital Government Services

H_{5a}: FC will have a positive influence on e-filing service usage behaviour

H_{5b}: FC will have a positive influence on e-payment service usage behaviour

Facilitating Conditions are key to technology adoption. In the absence of these, it is nearly impossible to use any technology. For digital government in Zambia, facilitating conditions include the network infrastructure, availability of computers, accessibility of digital government services and availability of support. The results of the SEM structural assessment revealed that the relationships e-Filing ← FC and e-Payment ← FC showed significant and positive influence on actual behaviour to use both the e-filing and e-Payment services.

CHAPTER 11

11. CONCLUSION

11.1 Introduction

The study investigated the moderating and mediating influence of indigenous African culture as well as that of internet access on the adoption of digital government services (e-filing and e-payment) among SMEs in Zambia. The study sought to examine the extent to which adoption is influenced by indigenous African culture and internet access in low-income countries such as Zambia, which have consistently lagged behind. The research has both theoretical and practical significance. Theoretically, the research links indigenous African culture to adoption of digital government, in particular e-filing as well as e-payment. There has been a knowledge gap on the effect of indigenous African culture. Practically, the study offers leads into digital government strategies that could help improve adoption levels in Zambia, and other low-income countries that are contextually similar.

Through a systematic review, three constructs were identified as the indigenous African cultures that influence digital government; spirituality, African communalism and respect for elders and authority. The three constructs, as well as internet access, were investigated for the moderating as well as mediating effect on digital government adoption using the Unified Theory of Acceptance and Use of Technologies (UTAUT) as the theoretical model. The data collected from 401 SMEs was analysed using Structural Equations Modelling (SEM). The detailed conclusions of the study are discussed in subsequent sections.

11.2 Effect of Indigenous African Culture

The study reveals that the adoption of digital government initiatives by SMEs can be hindered by indigenous Africa culture, particularly *spirituality*, *communalism* and *respect for authority and elders*. The study therefore moves the conversation around the failure of digital innovations beyond the mere mention of problematic “culture” by identifying specific cultural constructs. The identification of such constructs should assist further research and investigation on how to incorporate culture as part of digital innovation in the African context, especially in the context of government. Deliberate policies and regulations, targeted at encouraging social as well as cultural practices that inspire digital government adoption, and a strong change management

programme are key to assuring sustainable development in respect of ICT, especially in low-income countries.

Spirituality, which should be understood beyond religion and encompasses beliefs, values, traditions and ways of thinking, moderates SMEs' intention to adopt digital government the most. This means that spirituality, and its expression in religion, aspects which are strong in Africa are some of the reasons. One suggestion is not to suppress spirituality but to find means in which spirituality and religion might rather add to the adoption of digital innovations in Africa. The integration of digital symbols and spiritual artefacts in the design of digital government innovations could stir interest especially that an association would be made with the meanings of such symbols and artefacts thereby negating the adverse effects of spirituality. The practical implication is that the SMEs would be culturally associated with the innovations, making adoption much easier. Change management strategies associated with major implementations such as digital government should include spirituality messages, especially those that support adoption.

African Communalism, sometimes also known as Ubuntu, has both negative moderating and negative mediating influence on the relationship between social influence and behavioural intention for both e-filing as well as e-payment. The more the SMEs exhibit communalism, the less they adopt the digital government services. For e-payment services African communalism was found to be only a significant mediator meaning that for e-payment, SMEs are more likely to use digital means to pay because other SMEs are doing the same. The practical implication is that more efforts can then be placed in encouraging more SMEs to pay using digital means to create a cascading effect over time.

Respect for authority and elders was also found to have negative moderating and mediating influence on the relationship between social influence and behavioural intention to use both e-filing and e-payment services. Zambia, like most low-income countries in Africa, has a strong culture of respect for authority and elders resulting in a social environment that strongly influences behaviour for individuals. If people in positions of authority in the community and elders hold a certain view on a subject matter, such a view is likely to be adopted by the community members. The finding reveals that the subordination of SME owner behaviour to those in authority and to elders implies that he or she will probably defer to what will please those in authority rather than what would promote the business. Such choices therefore

influence digital government adoption. The practical implication is that digital innovations therefore need to start with community elders and those in authority.

The above findings reveal important subtleties that suggest that the over focus on factors such as infrastructure, software licences, skilled labour as well as financial resources should be reconsidered when digital government implementation and adoption in low-income countries is evaluated. It is equally important to measure the influence of context-specific softer cultural issues such as spirituality that are deeply rooted in the indigenous cultures of African communities and societies, African communalism and respect for elders and authority.

Implementers of digital government services, especially in low-income countries, should undertake a thorough review of both hard and soft issues that potentially affects the implementation and adoption of digital government services. While hard issues may be easier to address, tackling soft issues takes longer. Therefore, knowledge of the existence of beliefs and values such as indigenous African culture, in all its forms, is critical. The findings provide insight into the more salient cultural aspects that influence digital government programmes in low-income countries in Africa.

The results also emphasise the need for more thoughtful training programmes whenever a new digital government artefact is released.

11.3 Practical effect of Internet Access and UTAUT Constructs

There has been extensive development in the ICT infrastructure with the a countrywide deployment of optic fiber in Zambia. Mobile service providers further reduced tariffs following government's provision of concessions and installation of microwave towers to enable universal access. It was therefore assumed that internet access would positively influence behavioral intention to use digital government services in Zambia. The results of the structural model revealed that, on the contrary, internet access had a negative significant influence on behavioral intention to use digital government services. This result reveals that internet access in Zambia is still perceived to be a hindrance to digital government adoption, especially for the small and micro enterprises. These findings call for a review of internet access in Zambia with a view of developing regulations that enable attainment of universal access by all citizens especially SMEs for the purpose of digital government development and adoption. Such a review would be useful in other low-income countries of similar social context.

The structural model also showed that the expectation that e-filing would improve performance of filing tax returns was insignificant. Most SMEs found the e-filing service of digital government to be relatively complex. There is therefore a need to improve the current processes and functionality of the e-filing service of the tax system in Zambia with a view of simplifying them. A detailed training programme can help mitigate the perception of complexity. Facilitating conditions such as ICT infrastructure, if available and accessible, would positively influence usage behavior of e-filing as well as e-payment. Behavioral intention also positively influenced e-filing and e-payment usage.

11.4 Digital Government Usage

This study also revealed that digital government services are still under-utilised in Zambia. A deliberate policy of implementing optic fibre links to households and business premises coupled with measures to reduce tariffs would enhance usage of other digital government services. Improving the network infrastructure to enhance internet access provides essential means of encouraging digital government usage. Another option that encourages digital government uptake or usage is the elimination of alternative ways of interacting with government to obtain services. This could encourage SMEs to adopt digital means of engaging government. The other option is to enact pro-digital government regulations and laws.

The formation of the Smart Zambia Institute aimed at implementing digital government in Zambia provides a suitable platform to coordinate and regulate digital government activities. The Institute should address aspects whereby digital government innovations are designed, implemented and used in isolation. The Institute should also review the usability of digital government initiatives in the lens of the consumer, SMEs with the aim of ensuring that solutions are adapted to suit local needs.

11.5 Theoretical Implications of the Research

The study offers some important implication for research. First, the study broadens the knowledge of the influence of culture on digital government adoption by offering comprehensive and a systematic literature in contextualised aspects of culture and digital government with key reflections on both information systems as well as cultural perspectives. The findings show that indigenous African culture is a multidimensional factor comprising among others, spirituality, African communalism and respect for elders and authority, which influence relationships between exogenous constructs such as social influence and intention to

adopt information systems. This is largely due to the positioning of SMEs in social networks (as explained in Chapter 3, Section 3.2.5) where cultural influences become osmotic. The research further established a theoretical model to validate the moderation and mediation effects of the indigenous African culture. The findings lay further opportunities to develop or even strengthen existing theory in the field of digital government.

11.6 Research Contributions

Three principal contributions are key outcomes of this research. First, through a systematic literature review, this study identifies the uniqueness of indigenous African culture in digital government research. Of the 33 relevant scholarly articles reviewed, only one, in a pilot study, attempted to investigate the influence of indigenous African culture. The E-Government Development Index juxtaposed with the Human Development Index in Chapter 3 reveals a need for contextualised solutions to address digital government adoption problems experienced by SMEs in Africa in general and Zambia in particular. Second, the study introduces three aspects of indigenous African cultural constructs that potentially influence SMEs' adoption of digital government: spirituality, African communalism and respect for authority and elders. As highlighted in Chapter 2, these indigenous cultural constructs are deeply rooted in African communities from which SMEs originate. Third, the study presents an adoption model that could be extended to similar cultural contexts to validate the effect of indigenous cultural constructs on digital government.

11.7 Recommendations and Future Work

This study makes a contribution to the literature on Information Systems, information and communication technology for development (ICT4D) as well as digital government. The study develops theoretical insight into digital government adoption and delves into cultural constituents that provide context in appraising digital government models in African countries.

The researcher recommends that a similar study be undertaken in another African country or a low-income country of a similar context. Other research designs such as interpretive studies are recommended to elicit other indigenous social and cultural influences and to get deeper insights into causal relationships.

In respect of practice and policy, the researcher recommends that policies and programmes that address contextualized indigenous cultural dispensations be developed and implemented.

11.8 Research Limitation

Generalisability from a single study represents one limitation of the research. Qualitative methods could also be triangulated with the research results to deepen insight into influence of African indigenous culture on digital government adoption. The study purposely focused on SMEs who actively use the internet. The time horizon considered was cross-sectional rather than longitudinal. Collecting data over a period of time to synthesise behavioural patterns regarding digital government adoption may reveal clear trends, which may provide more insight. Use of a case study or a narrative inquiry applying an interpretivist philosophy could be used in future studies to gain a deeper insight into African communalism and its effects on digital government. The research could also benefit from the application of statistical techniques to address common method biases.

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APPENDIX I : Research Questionnaire 1



Questionnaire.xps

APPENDIX II : e-filing Modification Indices

Error term		Par	M.I.	Par Change
e44	<-->	SI	7.779	.015
e44	<-->	PE	4.444	-.019
e45	<-->	SI	4.615	.014
e45	<-->	e44	37.998	.072
e43	<-->	IA	5.966	.033
e43	<-->	EE	5.068	-.025
e43	<-->	e44	54.941	.093

e43	<-->	e45	16.135	.062
e42	<-->	FC	7.952	.019
e46	<-->	FC	6.107	-.021
e46	<-->	SI	5.251	-.015
e46	<-->	PE	29.208	.056
e46	<-->	e44	5.038	-.025
e32	<-->	IA	4.208	.023
e32	<-->	PE	4.515	.021
e32	<-->	e45	4.457	-.027
e31	<-->	e32	25.935	.061
e30	<-->	EE	8.634	.032
e30	<-->	e44	6.667	-.033
e30	<-->	e43	8.277	-.048
e30	<-->	e33	16.512	.046
e30	<-->	e32	9.022	-.041
e30	<-->	e31	11.783	-.051
e26	<-->	IA	5.082	.033

e26	<-->	e43	7.461	-.048
e26	<-->	e32	6.570	-.038
e26	<-->	e30	18.171	.078
e27	<-->	FC	4.894	.020
e27	<-->	e43	24.066	-.075
e27	<-->	e46	6.024	-.034
e27	<-->	e32	8.629	-.038
e27	<-->	e30	5.785	.038
e27	<-->	e26	6.362	.043
e28	<-->	PE	4.158	-.028
e28	<-->	e44	7.442	.040
e28	<-->	e43	17.006	.077
e28	<-->	e32	9.154	.048
e28	<-->	e30	12.031	-.068
e28	<-->	e27	16.164	-.072
e29	<-->	FC	4.127	-.021
e29	<-->	SI	9.697	.024

e29	<-->	e44	19.088	.058
e29	<-->	e45	8.500	.048
e29	<-->	e43	4.751	.037
e29	<-->	e32	5.188	.033
e29	<-->	e30	30.459	-.098
e29	<-->	e26	9.253	-.056
e29	<-->	e27	13.742	-.060
e29	<-->	e28	69.248	.163
e38	<-->	e45	5.424	.036
e38	<-->	e43	10.505	.055
e38	<-->	e31	4.787	.033
e38	<-->	e30	5.591	-.040
e38	<-->	e28	7.973	.056
e38	<-->	e29	8.765	.053
e37	<-->	e45	7.547	.042
e37	<-->	e43	9.685	.051
e37	<-->	e26	9.415	-.055

e37	<-->	e28	11.490	.065
e37	<-->	e38	9.300	.051
e34	<-->	EE	9.367	.029
e34	<-->	PE	4.082	-.021
e34	<-->	e44	4.273	-.022
e34	<-->	e26	20.642	.073
e34	<-->	e28	6.006	-.042
e34	<-->	e29	12.047	-.054
e34	<-->	e37	16.880	-.059
e39	<-->	SI	9.609	.021
e39	<-->	PE	4.693	-.024
e39	<-->	e44	5.454	.028
e39	<-->	e30	9.353	-.048
e39	<-->	e29	9.476	.051
e39	<-->	e38	28.263	.081
e41	<-->	e45	13.035	-.062
e41	<-->	e31	6.323	-.042

e41	<-->	e30	18.941	.083
e41	<-->	e26	7.208	.055
e41	<-->	e27	22.978	.085
e41	<-->	e28	16.000	-.087
e41	<-->	e29	10.286	-.064
e41	<-->	e38	15.571	-.075
e41	<-->	e34	5.964	.041
e41	<-->	e39	8.610	-.051
e21	<-->	EE	4.482	.019
e21	<-->	PE	6.607	-.025
e21	<-->	e26	11.595	-.051
e21	<-->	e29	7.364	.039
e21	<-->	e39	14.557	.049
e21	<-->	e41	12.833	-.055
e20	<-->	FC	6.546	.019
e20	<-->	EE	4.327	-.019
e20	<-->	e46	4.827	-.026

e20	<-->	e30	5.925	-.034
e20	<-->	e28	4.036	.032
e20	<-->	e38	4.552	.030
e20	<-->	e21	20.176	.050
e17	<-->	IA	13.550	.046
e17	<-->	e44	14.909	-.046
e17	<-->	e43	5.571	-.037
e17	<-->	e42	7.588	.031
e17	<-->	e31	7.135	-.037
e17	<-->	e30	5.770	.038
e17	<-->	e26	32.249	.098
e17	<-->	e28	17.786	-.077
e17	<-->	e29	21.915	-.078
e17	<-->	e38	6.546	-.041
e17	<-->	e41	23.571	.086
e17	<-->	e20	7.281	-.034
e13	<-->	EE	5.213	.029

e13	<-->	e44	12.808	-.052
e13	<-->	e45	4.200	-.037
e13	<-->	e43	17.892	-.081
e13	<-->	e31	8.326	-.049
e13	<-->	e30	30.301	.107
e13	<-->	e26	13.147	.076
e13	<-->	e28	9.726	-.070
e13	<-->	e29	26.997	-.105
e13	<-->	e38	12.107	-.068
e13	<-->	e37	5.604	-.045
e13	<-->	e39	5.076	-.041
e13	<-->	e41	16.990	.089
e13	<-->	e20	17.877	-.067
e13	<-->	e17	25.776	.092
e14	<-->	e43	5.422	-.047
e14	<-->	e28	6.130	-.058
e14	<-->	e13	28.433	.124

e12	<-->	IA	4.262	-.023
e12	<-->	e31	7.651	.033
e12	<-->	e21	12.539	.040
e6	<-->	IA	14.290	.043
e6	<-->	SI	6.065	-.015
e6	<-->	e27	13.441	.048
e6	<-->	e29	10.750	-.049
e6	<-->	e39	15.376	-.052
e6	<-->	e41	4.376	.033
e6	<-->	e21	4.611	-.025
e4	<-->	e30	6.143	-.040
e4	<-->	e26	11.631	-.059
e3	<-->	e43	6.596	.038
e3	<-->	e38	6.228	.037
e3	<-->	e34	6.244	-.032
e3	<-->	e17	10.907	.045
e3	<-->	e6	12.509	-.044

e22	<-->	e26	6.690	.037
e22	<-->	e28	4.139	-.031
e22	<-->	e34	6.715	.030
e22	<-->	e41	7.431	.040
e22	<-->	e20	5.565	-.025
e22	<-->	e17	5.354	.028
e22	<-->	e12	7.727	-.030
e23	<-->	e30	7.077	.033
e23	<-->	e22	9.755	.029
e24	<-->	e12	9.960	.030
e24	<-->	e6	4.317	-.020
e24	<-->	e3	11.599	.035
e25	<-->	FC	4.648	.018
e25	<-->	PE	12.289	-.035
e25	<-->	e30	9.879	-.044
e25	<-->	e22	12.274	-.038
e25	<-->	e24	23.837	.047

e36	<-->	IA	5.367	-.028
e36	<-->	e45	6.610	.036
e36	<-->	e43	7.774	.042
e36	<-->	e30	4.891	-.034
e36	<-->	e29	30.109	.088
e36	<-->	e37	8.298	.043
e36	<-->	e20	5.848	.030
e36	<-->	e17	6.647	-.037
e36	<-->	e13	5.711	-.042
e36	<-->	e14	4.618	-.040
e35	<-->	e43	7.232	.039
e35	<-->	e28	4.974	.037
e35	<-->	e34	4.325	.025
e35	<-->	e41	6.224	-.041
e40	<-->	e44	9.056	.038
e40	<-->	e42	4.974	-.026
e40	<-->	e39	4.512	-.031

e40	<-->	e41	11.281	.062
e2	<-->	PE	4.191	-.023
e2	<-->	e43	27.370	.081
e2	<-->	e42	7.158	-.030
e2	<-->	e31	7.222	.037
e2	<-->	e30	6.831	-.041
e2	<-->	e26	7.381	.046
e2	<-->	e28	4.157	.037
e2	<-->	e14	4.123	.038
e2	<-->	e12	5.382	-.030
e2	<-->	e6	21.533	.061
e2	<-->	e36	5.943	-.035
e1	<-->	IA	12.650	-.048
e1	<-->	PE	10.320	.039
e1	<-->	e44	4.894	-.029
e1	<-->	e45	7.175	-.043
e1	<-->	e43	24.199	-.085

e1	<-->	e42	15.876	.049
e1	<-->	e46	11.663	.051
e1	<-->	e31	7.323	-.041
e1	<-->	e30	31.121	.097
e1	<-->	e27	4.729	.035
e1	<-->	e28	13.813	-.074
e1	<-->	e29	16.010	-.073
e1	<-->	e38	9.843	-.055
e1	<-->	e41	22.308	.092
e1	<-->	e20	8.447	-.041
e1	<-->	e17	4.806	.036
e1	<-->	e13	16.452	.081
e1	<-->	e12	9.758	-.044
e1	<-->	e4	11.100	-.054
e1	<-->	e22	4.418	.028
e1	<-->	e23	7.367	.035
e1	<-->	e36	5.937	-.038

e19	<-->	SI	9.645	.024
e19	<-->	e44	16.699	.055
e19	<-->	e43	20.487	.080
e19	<-->	e28	13.576	.076
e19	<-->	e37	14.672	.067
e19	<-->	e34	7.225	-.042
e19	<-->	e21	13.816	-.053
e19	<-->	e20	23.794	.070
e19	<-->	e13	6.355	-.051
e19	<-->	e36	10.236	.052
e19	<-->	e40	5.283	.040
e19	<-->	e1	10.305	-.059
e18	<-->	EE	7.148	.026
e18	<-->	e44	6.233	-.028
e18	<-->	e45	4.925	-.030
e18	<-->	e43	6.650	-.038
e18	<-->	e29	10.658	-.051

e18	<-->	e41	4.898	.037
e18	<-->	e17	7.231	.037
e18	<-->	e13	6.029	.042
e18	<-->	e6	4.846	.027
e18	<-->	e1	6.508	.039
e18	<-->	e19	5.772	-.037
e16	<-->	PE	17.585	.052
e16	<-->	e44	23.299	-.063
e16	<-->	e45	9.526	-.050
e16	<-->	e43	8.360	-.050
e16	<-->	e46	8.795	.045
e16	<-->	e26	8.259	-.055
e16	<-->	e38	7.630	-.049
e16	<-->	e34	5.812	-.037
e16	<-->	e17	4.561	-.035
e16	<-->	e12	5.936	.035
e16	<-->	e3	5.179	.035

e16	<-->	e35	5.226	-.035
e16	<-->	e2	7.015	-.043
e16	<-->	e19	6.201	-.046
e15	<-->	SI	7.152	-.019
e15	<-->	PE	11.542	.040
e15	<-->	e44	12.208	-.044
e15	<-->	e45	14.174	-.059
e15	<-->	e43	21.999	-.079
e15	<-->	e42	5.846	-.029
e15	<-->	e46	5.176	.033
e15	<-->	e32	4.210	.028
e15	<-->	e26	10.830	-.060
e15	<-->	e38	6.584	-.044
e15	<-->	e13	18.753	.084
e15	<-->	e14	14.112	.076
e15	<-->	e4	6.324	.040
e15	<-->	e3	6.739	-.038

e15	<-->	e35	5.226	-.033
e15	<-->	e19	7.206	-.048
e15	<-->	e16	111.055	.185
e11	<-->	IA	4.519	-.021
e11	<-->	EE	9.539	.024
e11	<-->	PE	4.740	-.019
e11	<-->	e44	4.802	.020
e11	<-->	e42	5.171	-.020
e11	<-->	e30	4.478	-.026
e11	<-->	e28	5.322	.033
e11	<-->	e21	4.205	.021
e11	<-->	e17	9.896	-.037
e11	<-->	e13	5.491	-.033
e11	<-->	e12	16.700	.041
e11	<-->	e1	8.037	-.036
e10	<-->	IA	5.975	.026
e10	<-->	e27	5.213	-.028

e10	<-->	e13	7.804	.042
e10	<-->	e22	7.596	-.028
e9	<-->	e30	11.800	.045
e9	<-->	e26	6.030	.035
e9	<-->	e27	8.048	.035
e9	<-->	e28	6.536	-.039
e9	<-->	e29	7.117	-.036
e9	<-->	e34	27.179	.060
e9	<-->	e39	7.120	-.033
e9	<-->	e41	21.810	.068
e9	<-->	e21	4.208	-.022
e9	<-->	e20	11.477	-.036
e9	<-->	e17	9.653	.038
e9	<-->	e13	9.126	.045
e9	<-->	e12	18.625	-.045
e9	<-->	e22	35.555	.060
e9	<-->	e24	11.272	-.030

e9	<-->	e25	8.465	-.032
e9	<-->	e36	7.055	-.031
e9	<-->	e1	18.170	.057
e9	<-->	e18	11.360	.039
e9	<-->	e16	10.335	-.044
e8	<-->	e32	5.553	.027
e8	<-->	e29	5.829	.035
e8	<-->	e34	10.414	-.040
e8	<-->	e13	6.240	-.040
e8	<-->	e12	9.569	.035
e8	<-->	e6	8.184	-.033
e8	<-->	e22	28.211	-.057
e8	<-->	e25	7.737	.032
e8	<-->	e18	9.452	-.038
e8	<-->	e15	6.664	.036
e8	<-->	e11	13.983	.038
e8	<-->	e9	23.962	-.053

e7	<-->	IA	4.682	-.020
e7	<-->	e32	6.167	.023
e7	<-->	e26	8.735	-.036
e7	<-->	e29	6.787	.031
e7	<-->	e34	6.763	-.026
e7	<-->	e39	4.425	.022
e7	<-->	e41	4.716	-.028
e7	<-->	e20	4.648	-.020
e7	<-->	e17	4.336	-.022
e7	<-->	e14	4.607	-.029
e7	<-->	e3	4.721	.021
e7	<-->	e24	6.757	.020
e7	<-->	e25	4.129	-.019
e7	<-->	e2	14.026	-.039
e7	<-->	e18	4.103	.020
e7	<-->	e16	8.477	.034
e7	<-->	e11	4.843	-.018

e7	<-->	e10	7.115	.024
e7	<-->	e8	9.812	.029
e5	<-->	EE	4.190	-.018
e5	<-->	e30	5.610	.033
e5	<-->	e26	14.451	.057
e5	<-->	e28	4.693	-.035
e5	<-->	e29	5.774	-.035
e5	<-->	e38	4.164	-.029
e5	<-->	e34	7.588	.034
e5	<-->	e39	6.457	-.033
e5	<-->	e41	13.476	.057
e5	<-->	e13	11.780	.055
e5	<-->	e12	4.817	-.025
e5	<-->	e6	4.961	.025
e5	<-->	e4	8.577	-.039
e5	<-->	e22	24.671	.054
e5	<-->	e25	18.949	-.051

e5	<-->	e35	8.740	-.035
e5	<-->	e1	9.006	.043
e5	<-->	e10	6.611	-.028
e5	<-->	e9	15.571	.042

APPENDIX III : e-Payment Modification Indices

			M.I.	Par Change
e44	<-->	IA	5.621	.029
e44	<-->	EE	12.277	-.031
e45	<-->	e44	22.838	.052
e43	<-->	EE	15.923	-.046
e43	<-->	e44	33.747	.066
e43	<-->	e45	5.210	.032
e46	<-->	FC	8.140	-.033
e46	<-->	SI	4.377	-.014
e46	<-->	EE	16.739	.050
e46	<-->	PE	6.842	.037
e46	<-->	e45	4.587	-.032
e33	<-->	e45	4.230	-.024
e32	<-->	e33	25.369	.044
e31	<-->	PE	5.057	-.023
e31	<-->	e32	8.138	-.023
e30	<-->	e33	25.084	-.059
e30	<-->	e31	32.171	.063
e26	<-->	IA	5.060	.040
e26	<-->	SI	6.119	-.018
e26	<-->	PE	7.469	.042
e26	<-->	e43	6.812	-.042
e26	<-->	e32	4.104	-.026
e26	<-->	e30	22.149	.079

			M.I.	Par Change
e27	<-->	IA	10.726	-.051
e27	<-->	FC	10.694	.036
e27	<-->	PE	14.765	.051
e27	<-->	e43	19.906	-.064
e27	<-->	e46	5.056	-.035
e27	<-->	e32	4.645	-.024
e27	<-->	e26	5.460	.039
e28	<-->	IA	4.434	.041
e28	<-->	EE	6.638	-.037
e28	<-->	PE	5.712	-.039
e28	<-->	e44	4.410	.030
e28	<-->	e43	16.660	.071
e28	<-->	e33	7.647	.042
e28	<-->	e30	9.449	-.056
e28	<-->	e27	14.665	-.069
e29	<-->	SI	9.670	.022
e29	<-->	EE	6.576	-.033
e29	<-->	PE	6.256	-.037
e29	<-->	e44	12.644	.045
e29	<-->	e32	7.366	.033
e29	<-->	e30	20.098	-.073
e29	<-->	e26	10.203	-.058
e29	<-->	e27	14.079	-.060
e29	<-->	e28	71.913	.167

			M.I.	Par Change
e38	<-->	PE	5.385	-.033
e38	<-->	e45	5.561	.035
e38	<-->	e43	9.134	.048
e38	<-->	e46	12.489	-.060
e38	<-->	e30	4.303	-.033
e38	<-->	e28	7.453	.054
e38	<-->	e29	8.374	.052
e37	<-->	FC	5.357	.027
e37	<-->	e45	4.614	.032
e37	<-->	e43	5.787	.037
e37	<-->	e26	10.685	-.058
e37	<-->	e28	9.994	.060
e37	<-->	e38	8.168	.048
e34	<-->	e30	11.065	.046
e34	<-->	e26	20.231	.072
e34	<-->	e27	4.648	.030
e34	<-->	e28	5.942	-.042
e34	<-->	e29	12.178	-.054
e34	<-->	e37	16.935	-.059
e39	<-->	SI	4.110	.013
e39	<-->	EE	6.801	-.030
e39	<-->	e42	8.060	.034
e39	<-->	e46	7.013	-.042
e39	<-->	e30	5.169	-.034

			M.I.	Par Change
e39	<-->	e29	8.318	.048
e39	<-->	e38	32.659	.089
e41	<-->	SI	6.274	-.019
e41	<-->	PE	22.055	.075
e41	<-->	e45	6.962	-.044
e41	<-->	e33	8.856	-.043
e41	<-->	e30	30.495	.097
e41	<-->	e26	7.137	.054
e41	<-->	e27	23.563	.085
e41	<-->	e28	15.380	-.086
e41	<-->	e29	10.246	-.063
e41	<-->	e38	14.547	-.072
e41	<-->	e34	6.951	.044
e41	<-->	e39	7.013	-.046
e21	<-->	e43	4.281	-.025
e21	<-->	e26	10.961	-.046
e20	<-->	FC	4.870	.019
e20	<-->	EE	6.257	-.023
e20	<-->	e43	15.463	.047
e20	<-->	e46	5.788	-.031
e20	<-->	e33	5.116	.022
e20	<-->	e30	14.720	-.046
e20	<-->	e27	5.192	.027
e20	<-->	e28	7.790	.042

			M.I.	Par Change
e20	<-->	e21	9.662	.030
e17	<-->	e43	7.025	-.043
e17	<-->	e33	12.229	-.046
e17	<-->	e31	5.008	.028
e17	<-->	e30	11.157	.054
e17	<-->	e26	16.508	.076
e17	<-->	e28	15.499	-.079
e17	<-->	e29	10.476	-.058
e17	<-->	e41	7.455	.053
e17	<-->	e20	9.917	-.041
e13	<-->	IA	5.301	-.041
e13	<-->	FC	6.571	-.033
e13	<-->	EE	18.373	.057
e13	<-->	e44	17.553	-.055
e13	<-->	e45	4.425	-.034
e13	<-->	e43	8.171	-.048
e13	<-->	e33	4.733	-.030
e13	<-->	e30	12.873	.061
e13	<-->	e26	7.614	.054
e13	<-->	e28	26.528	-.109
e13	<-->	e29	5.307	-.044
e13	<-->	e38	5.489	-.043
e13	<-->	e37	7.067	-.047
e13	<-->	e39	22.530	-.081

			M.I.	Par Change
e13	<-->	e41	18.102	.087
e13	<-->	e20	6.116	-.034
e13	<-->	e17	7.009	.049
e14	<-->	FC	5.947	-.036
e14	<-->	EE	11.960	.053
e14	<-->	PE	8.063	-.050
e14	<-->	e45	15.800	-.075
e14	<-->	e43	7.653	-.054
e14	<-->	e28	6.148	-.060
e14	<-->	e38	5.132	-.048
e14	<-->	e20	5.248	-.037
e14	<-->	e13	23.323	.110
e12	<-->	e37	5.913	.032
e12	<-->	e34	9.203	-.037
e12	<-->	e39	5.853	.031
e12	<-->	e41	4.272	-.032
e6	<-->	IA	4.997	.032
e6	<-->	e27	10.061	.042
e6	<-->	e29	6.205	-.037
e6	<-->	e39	14.128	-.051
e6	<-->	e20	8.702	-.032
e4	<-->	e30	4.809	-.035
e4	<-->	e26	8.036	-.053
e3	<-->	e46	10.861	.054

			M.I.	Par Change
e3	<-->	e33	5.563	.030
e3	<-->	e32	4.370	.024
e3	<-->	e13	6.148	-.044
e3	<-->	e4	35.132	.099
e22	<-->	PE	4.503	.022
e22	<-->	e33	5.512	-.023
e22	<-->	e30	12.482	.041
e22	<-->	e26	26.185	.069
e22	<-->	e28	5.758	-.035
e22	<-->	e29	9.697	-.041
e22	<-->	e41	7.187	.038
e22	<-->	e21	6.623	-.025
e22	<-->	e20	5.526	-.022
e22	<-->	e17	5.395	.030
e22	<-->	e13	11.780	.046
e23	<-->	e33	11.936	-.032
e23	<-->	e31	4.038	.018
e23	<-->	e22	20.323	.039
e24	<-->	FC	4.526	.018
e24	<-->	e46	8.809	-.036
e24	<-->	e33	5.168	.021
e24	<-->	e32	4.098	-.017
e24	<-->	e30	5.097	-.026
e24	<-->	e26	8.202	-.038

			M.I.	Par Change
e24	<-->	e38	12.840	.045
e24	<-->	e39	10.118	.037
e24	<-->	e41	9.197	-.042
e24	<-->	e21	4.890	.021
e24	<-->	e20	6.341	.024
e24	<-->	e13	12.134	-.046
e24	<-->	e6	4.966	-.023
e25	<-->	SI	4.878	.012
e25	<-->	e33	18.915	.045
e25	<-->	e30	15.376	-.049
e25	<-->	e28	4.115	.032
e25	<-->	e21	4.059	.021
e25	<-->	e22	8.552	-.029
e25	<-->	e23	10.049	-.030
e25	<-->	e24	29.353	.052
e36	<-->	SI	5.169	.014
e36	<-->	EE	8.495	-.032
e36	<-->	e43	4.371	.030
e36	<-->	e42	5.447	.027
e36	<-->	e32	8.569	.031
e36	<-->	e30	14.784	-.054
e36	<-->	e29	27.877	.084
e36	<-->	e37	6.328	.037
e36	<-->	e14	6.820	-.050

			M.I.	Par Change
e36	<-->	e23	4.325	.023
e35	<-->	IA	9.362	.044
e35	<-->	e32	7.102	-.027
e35	<-->	e34	6.017	.030
e35	<-->	e41	5.513	-.038
e35	<-->	e13	7.695	-.043
e35	<-->	e3	7.022	.037
e35	<-->	e24	10.879	.035
e40	<-->	e42	4.263	-.025
e40	<-->	e46	4.307	.034
e40	<-->	e39	5.184	-.033
e40	<-->	e41	9.619	.056
e40	<-->	e13	4.013	.035
e40	<-->	e24	8.183	-.034
e2	<-->	IA	6.553	.038
e2	<-->	e43	10.797	.049
e2	<-->	e46	4.456	-.034
e2	<-->	e26	6.297	.043
e2	<-->	e27	17.366	-.062
e2	<-->	e28	5.449	.043
e2	<-->	e41	4.349	-.037
e2	<-->	e4	5.635	-.038
e1	<-->	e42	5.150	.031
e1	<-->	e32	6.030	-.032

			M.I.	Par Change
e1	<-->	e30	6.519	.044
e1	<-->	e4	20.689	-.086
e1	<-->	e3	18.360	-.076
e1	<-->	e2	37.992	.103
e19	<-->	e43	11.905	.052
e19	<-->	e28	21.275	.086
e19	<-->	e20	14.504	.046
e19	<-->	e3	7.325	-.043
e19	<-->	e36	6.103	.036
e19	<-->	e2	13.612	.057
e18	<-->	PE	4.877	.027
e18	<-->	e33	5.998	-.027
e18	<-->	e31	6.533	.027
e18	<-->	e30	12.651	.048
e18	<-->	e17	19.228	.065
e18	<-->	e13	4.130	-.032
e18	<-->	e6	6.336	.031
e18	<-->	e25	8.873	-.035
e18	<-->	e36	8.116	-.037
e18	<-->	e19	4.044	-.028
e16	<-->	IA	11.197	-.052
e16	<-->	EE	7.765	.032
e16	<-->	e44	25.282	-.058
e16	<-->	e45	6.318	-.036

			M.I.	Par Change
e16	<-->	e43	7.438	-.040
e16	<-->	e34	6.591	-.036
e16	<-->	e39	5.781	-.036
e16	<-->	e13	21.370	.079
e16	<-->	e14	13.668	.073
e16	<-->	e12	8.220	.037
e16	<-->	e2	17.246	-.063
e15	<-->	IA	8.472	-.044
e15	<-->	EE	29.509	.061
e15	<-->	e44	27.393	-.058
e15	<-->	e45	11.247	-.046
e15	<-->	e43	25.064	-.071
e15	<-->	e46	11.732	.052
e15	<-->	e32	6.421	.027
e15	<-->	e26	4.483	-.035
e15	<-->	e28	6.024	-.043
e15	<-->	e38	8.548	-.045
e15	<-->	e20	7.765	-.033
e15	<-->	e13	35.903	.099
e15	<-->	e14	24.880	.095
e15	<-->	e3	4.723	.032
e15	<-->	e36	5.999	-.034
e15	<-->	e2	12.872	-.052
e15	<-->	e16	115.516	.154

			M.I.	Par Change
e11	<-->	e33	13.494	.034
e11	<-->	e32	7.224	.023
e11	<-->	e31	5.508	-.021
e11	<-->	e30	11.327	-.038
e11	<-->	e17	5.419	-.029
e11	<-->	e12	7.619	.027
e11	<-->	e15	15.390	.043
e10	<-->	e44	8.748	-.027
e10	<-->	e14	17.251	.065
e10	<-->	e35	4.836	-.024
e9	<-->	PE	6.286	.028
e9	<-->	e33	15.512	-.040
e9	<-->	e32	7.811	-.026
e9	<-->	e31	12.599	.034
e9	<-->	e30	24.473	.061
e9	<-->	e26	5.586	.033
e9	<-->	e27	4.596	.026
e9	<-->	e28	14.374	-.058
e9	<-->	e29	5.438	-.032
e9	<-->	e38	7.555	-.037
e9	<-->	e37	9.861	-.040
e9	<-->	e34	12.557	.041
e9	<-->	e39	9.460	-.038
e9	<-->	e41	41.622	.095

			M.I.	Par Change
e9	<-->	e13	32.152	.080
e9	<-->	e12	15.524	-.041
e9	<-->	e22	21.772	.045
e9	<-->	e25	19.116	-.046
e8	<-->	e43	4.586	.030
e8	<-->	e33	8.212	.033
e8	<-->	e37	7.896	.041
e8	<-->	e34	10.512	-.043
e8	<-->	e39	11.157	.047
e8	<-->	e41	6.914	-.044
e8	<-->	e20	6.179	.028
e8	<-->	e17	7.749	-.043
e8	<-->	e13	5.201	-.037
e8	<-->	e12	8.397	.035
e8	<-->	e6	5.067	-.028
e8	<-->	e24	5.014	.024
e8	<-->	e15	4.720	-.029
e7	<-->	e32	7.817	.026
e7	<-->	e30	5.447	-.029
e7	<-->	e38	4.525	-.029
e7	<-->	e19	11.629	-.043
e7	<-->	e11	4.541	.020
e7	<-->	e8	6.001	.028
e5	<-->	IA	6.227	-.036

			M.I.	Par Change
e5	<-->	e33	4.323	-.023
e5	<-->	e30	24.766	.067
e5	<-->	e26	7.054	.042
e5	<-->	e27	8.950	.041
e5	<-->	e28	5.011	-.038
e5	<-->	e29	11.975	-.053
e5	<-->	e34	5.065	.029
e5	<-->	e39	4.047	-.028
e5	<-->	e41	31.014	.091
e5	<-->	e17	5.523	.035
e5	<-->	e13	14.051	.059
e5	<-->	e12	6.075	-.029
e5	<-->	e6	16.863	.049
e5	<-->	e22	14.848	.042
e5	<-->	e24	4.495	-.022
e5	<-->	e35	6.115	-.031
e5	<-->	e1	5.308	.037
e5	<-->	e11	9.070	-.031
e5	<-->	e9	9.361	.035
e5	<-->	e8	7.041	-.034

APPENDIX IV : Working title of Research

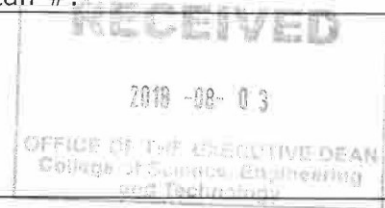
UNISA COLLEGE OF SCIENCE, ENGINEERING AND
TECHNOLOGY'S(CSET) RESEARCH AND ETHICS COMMITTEE

1 August 2018

Ref #: 029/YY/2018/CSET_SOC
Name: Mr Yakomba Yavwa
Student #: 58539905
Staff #:

Dear Mr Yakomba Yavwa

**Decision: Ethics Approval for 5 years
(Humans involved)**



Researchers: Mr Yakomba Yavwa, C/O Feya Waters Lodge, P. O. Box 110117,
Solwezi, Zambia, 58539905@mylife.unisa.ac.za, +260 968 666
010, +260 977 567 125

Project Leader(s): Prof H Twinomurinzi, twinoh@unisa.ac.za, +27 11 670 9361

WORKING TITLE OF RESEARCH

**THE INFLUENCE OF INDIGENOUS AFRICAN CULTURE AND INTERNET
ACCESS ON SME ADOPTION OF DIGITAL GOVERNMENT SERVICES: E-
FILING AND E-PAYMENT SERVICES IN ZAMBIA**

Qualification: PhD in Information Systems

Thank you for the application for research ethics clearance by the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee for the above mentioned research. Ethics approval is granted for a period of five years, from 01 August

2018 to 01 August 2023.

- 1 The researcher will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be

2. communicated in writing to the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee. An amended application could

be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date (01 August 2023). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Field work activities may only commence from the date on this ethics certificate.

Note:

The reference number 029/YY/2018/CSET SOC should be clearly indicated on all forms of communication with the intended research participants, as well as with the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee.

Yours sincerely



Dr. B Chimbo

Chair: Ethics Sub-Committee SOC, College of Science, Engineering and Technology (CSET)



Prof I. Osunmakinde

Prof B. Mamba

Director: School of Computing, CSET

Executive Dean: CSET

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APPENDIX V : Research Assistants



- a) A workshop to enlighten assistants on the research and how to complete the questionnaire



b) Research assistants pose for a photo with the researcher



c) Indigenous African Culture research assistant poses with a Likishi masquerade

APPENDIX VI : SLR Search Terms

The combination of search terms is outlined below.

[Unit of Analysis] AND [Technology Artefact] AND [Phenomenon of Interest]

1. Culture AND Digital government
2. Culture AND e-government
3. Culture AND egovernment
4. Culture AND e-gov
5. Culture AND e-governance
6. Culture AND Digital government AND Adoption
7. Culture AND e-government AND Adoption
8. Culture AND electronic government AND Adoption
9. Culture AND e-gov AND Adoption
10. Culture AND e-governance AND Adoption
11. Culture AND e government AND Adoption
12. Culture AND Digital government AND Acceptance
13. Culture AND e-government AND Acceptance
14. Culture AND electronic government AND Acceptance
15. Culture AND e-gov AND Acceptance
16. Culture AND e-governance AND Acceptance
17. Culture AND e government AND Acceptance
18. Culture AND Digital government AND Usage
19. Culture AND e-government AND Usage
20. Culture AND electronic government AND Usage
21. Culture AND e-gov AND Usage
22. Culture AND e-governance AND Usage
23. Culture AND e government AND Usage

APPENDIX VII : Codification Framework

Table 8: Results of Codification Framework

	Author /Year	Cultural dimensions	Context	Digital government perspective or Focus
1	(Choudrie <i>et al.</i> , 2017)	4C	1A	2C
2	(Schuppan, 2009)	4C, 4E	1A	2D, 2B, 2A
3	(Maumbe, Owei and Alexander, 2008)	4C	1A	2A
4	(Rorissa and Demissie, 2010)	4C	1A	2A
5	(Shemi, 2012)	4E, 4F	1A	2B
6	(Greunen and Yeratziotis, 2008)	4F, 4C	1A	2A
7	(Zhao, Shen and Collier, 2014)	4F	1A, 1B	2A
8	(Belachew, 2010)	4C	1A	2A
9	(Odongo and Rono, 2016)	4C	1A	2A
10	(Yavwa and Twinomurinzi, 2018)	4A	1A	2A

	Author /Year	Cultural dimensions	Context	Digital government perspective or Focus
11	(Elaswad and Jensen, 2016)	4C, 4D	1A	2A
12	(Takavarasha <i>et al.</i> , 2012)	4C, 4F	1A	2A
13	(Choudrie, Umeoji and Forson, 2012)	4F	1A	2A
14	(Bwalya, 2009b)	4A, 4C, 4F	1A	2A
15	(Heeks, 2002)	4C, 4F	1A	2A, 2B, 2D
16	(Evans and Yen, 2005)	4C, 4F	1B	2D, 2B, 2A
17	(Gallivan and Srite, 2005)	4F	1B	Generic
18	(Jackson and Wong, 2017)	4F	1B	2C
19	(Williams, Gulati and Yates, 2013)	4E	1B	2A
20	(Cyr, Bonanni and ilsever, 2004)	4F	1B	2A
21	(Cahlikova, 2014)	4E	1B	2A

	Author /Year	Cultural dimensions	Context	Digital government perspective or Focus
22	(Slack and Walton, 2008)	4A, 4E, 4F	1B	2C
23	(Li, Qi and Ma, 2007)	4E	1B	2A
24	(Mohamadi & Ranjbaran, 2013)	4C	1B	2A
25	(Akkaya, Wolf and Krcmar, 2012)	4F	1B	2A
26	(Alharbi, Papadaki and Dowland, 2014)	4C	1B	2A
27	(Ali, Weerakkody and El-Haddadeh, 2009b)	4F	1B	2C, 2A
28	(Liu <i>et al.</i> , 2007)	4C	1B	2A
29	(Daqing, 2010)	4E	1B	2B
30	(Anza, Sensuse and Ramadhan, 2017)	4E	1B	2D
31	(Mingqiang, 2010)	4E	1B	2D
32	(Navarrete, 2010)	4F	1B	2A
33	(AL-Shehry <i>et al.</i> , 2006)	4A, 4C	1B	2A

APPENDIX VIII : Dimensions of Culture

The cultural dimensions presented below are synthesised from the articles reviewed. For ease of analysis, the cultural dimensions are classified into six categories.

Table 9: Dimensions of culture associated with digital government research

Cultural dimensions	Source	Category
technological artefacts, audible, visible behaviour, values, kin loyalty, authority, patron client relations, holism, secrecy, ethnicity, risk aversion and religion.	(Choudrie <i>et al.</i> , 2017)	Indigenous
Religious beliefs, language structure, education	(Evans and Yen, 2005)	, Indigenous/communit ity
Hofstede's cultural dimensions	(Gallivan and Srite, 2005; Takavarasha <i>et al.</i> , 2012; Aladwani, 2013; Lee, Trimi and Kim, 2013; Zhao, Shen and Collier, 2014)	Organisational, National,

Cultural dimensions	Source	Category
Spirituality	(Kvasny and Lee, 2011)	indigenous
Communalism	(Shemi, 2012)(Ripamonti, 2008)	indigenous
Spiritualism, communalism, and respect	(Yavwa and Twinomurinzi, 2018)	indigenous
African Culture	(Ami-narh and Williams, 2012)	Community/indigenous