

**MOBILE GOVERNMENT ADOPTION IN MALAWI:
LESSONS LEARNT FROM SOUTH KOREA AND SOUTH AFRICA
(M-GOVERNMENT)**

MASTER OF SCIENCE (INFORMATICS) THESIS

INNOCENT MZOMA

UNIVERSITY OF MALAWI

OCTOBER, 2023



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MASTER OF SCIENCE (INFORMATICS) THESIS

By

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Submitted to the School of Natural and Applied Sciences, department of Computer Science, in partial fulfilment of the requirements for the degree of Master of Science (Informatics).

UNIVERSITY OF MALAWI

OCTOBER, 2023

DECLARATION

I, the undersigned, hereby declare that this thesis is my original work which has not been submitted to any other institution for similar purposes. Where other people's work has used, acknowledgements have been made.

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Date

CERTIFICATE OF APPROVAL

The undersigned certifies that this thesis represents the student's own work and effort and has been submitted with my approval.

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DEDICATION

This work is dedicated to my mum, Beatrice Mtunda.

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ABSTRACT

The growth of Information and Communication Technologies (ICTs) has prompted a transformation in government service delivery, shifting from conventional methods towards electronic transactions characterized by ubiquity and tailored services. This evolution sets the stage for the emergence of mobile government, particularly pertinent for developing nations experiencing rapid mobile device penetration. The concept of a connected government is crucial in fostering an information society in Malawi. Consequently, devising effective strategies for the adoption of mobile government becomes paramount. This study aims to identify critical success factors governing the adoption of mobile government in Malawi, with the overarching goal of enhancing service delivery in alignment with Malawi's vision for 2063, leveraging ICT as an enabler for economic growth. The research framework borrows from previous studies and encompasses Technological, Policy, and Social/Cultural factors. Adopting an External Online Desk Research Methodology, this research conducts a comparative analysis, drawing lessons from the success stories of South Africa and South Korea, utilizing online documents available on the internet as primary sources. The results of this comparative analysis emphasize the pivotal role of governmental involvement in promoting the success of mobile government initiatives. Moreover, it is evident that Malawi faces disparities in ICT infrastructure, Research and Development, and access to affordable internet. To bridge these gaps, the government must harness its youthful population, which is driving high mobile device penetration, to champion the cause of mobile government adoption. In conclusion, this research outlines recommendations tailored to the Malawian context, designed to facilitate the effective implementation of mobile government. These recommendations encompass priorities such as infrastructure development, the promotion of public-private partnerships, and the expedited enactment of essential technologies

Keywords: Mobile government, adoption, Critical success factors, Malawi

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LIST OF ABBREVIATIONS

ICT	Information Communication and Technology
PC	Personal Computer e-Government Electronic Government
MDA	Ministries, Departments and Agencies

CHAPTER 1

INTRODUCTION

1.1 Research Background

Since the 1990s, many governments in developed countries have been setting up programs for the electronically delivery of public services. This is indicated by the significant funding and initiatives set aside for e-government development (Ntaliani et al., 2008). Developing countries have also taken initiative to develop e-government systems. A drawback highlighted by Huang, D'-Ambra & Bhalla (2002) is that most developing countries duplicate the same strategies used by developed countries and this leads to failed implementations of e-government systems. Heeks (2002, 2019) also mentions that "Even in developed countries, 20-25% of e-government projects are either never implemented or abandoned immediately after implementation, and a further 33% fail partially in terms of falling short of major goals, causing significant undesirable outcomes or both."

Due to limitations of e-government, and because mobile communications technology has become the world's most common way of transmitting voice, data, and services in the developing world; mobile government has been indicated as an emerging trend in public service delivery since it guarantees mobility and portability for public, business and government services (Mengistu et al., 2009). This has also been due to high mobile device penetration as compared to PCs in developing countries (Kuscu et al., 2011).

Most success stories in e-government in Africa have been demonstrated in South African. For example, the Independent Electoral Commission (IEC) successfully developed an e-procurement system that allows for open and transparent bidding of government tenders aimed at preventing corruption. The South Africa Revenue Services (SARS) developed an e-filing system to conduct tax returns transactions on the internet between government and business (Pillay, 2012). The success of these

systems are attributed by South Africa's significant investment in ICT infrastructure as well as the effectiveness of policy and regulatory framework to roll out e-government services (Naidoo, 2012).

Nevertheless, numerous e-government have failed in Africa for various reasons as outlined below;

- ❖ A land licensing system was introduced by a municipal government in Southern Africa (Anonymous, 2000). The system was never used, largely because it conflicted with the entrenched interests of powerful groups who used land licensing for their own gain.
- ❖ The creation by the central government of a set of touch screen kiosks for remote rural communities in South Africa's North-West Province (Benjamin, 2001). These were initially well received by the communities. However, the kiosks' lack of updated or local content and lack of interactivity led to disuse, and they were removed less than one year later.
- ❖ Personnel Computerisation Project of Ghana's Volta River Authority. Most managerial staff in the finance department were pleased with the changes brought by the new system. However, the implementation "bred a feeling of resentment, bitterness and alienation" among some –lower level staff, and led to resistance and non-use, particularly among older workers (Tettey, 2000:72).

Over the past years, the government of Malawi recognized the significance of e-government to enhance the access to and delivery of government information and services to the public. As a result, there has been an increase of investments in ICT infrastructure. Malawi Government introduced the Digital Malawi project to extend and improve access to critical ICT infrastructure for the public and private sector (Digital Malawi Project, 2021). In 2022, the country's first ever National Data Center was launched in Blantyre to host all systems necessary for the operation of ICT (Data Centre Dynamics, 2022). Its implementation is supported by the National Fibre Backbone Project which was launched in 2017 with the aim of improving nationwide connectivity through the rollout of broadband services to connect government MDA's and various companies and households in the country (Telegeography, 2021).

During this period, various e-government systems have also been implemented in the labours of digitalizing government activities. Some of the systems include:

1. Integrated Financial Management Information System (IFMIS); an automated system that enhances efficiency in planning, budgeting, procurement, expenditure management and reporting in the Malawi Government.
2. Human Resources Management Information Systems (HRMIS); a payroll system for all civil servants in Malawi. The system does accept new recruits and it does remove those that have reached their retirement age.
3. National Registration and Identification System (NRIS); the system has the following deliverables: Birth Certificates, National Identity Cards for bonafide Malawians, and Identity Cards for Foreigners, Certificate for Registration for Marriage and Death Certificates.
4. Malawi Traffic Information Systems (MALTIS); the system handles vehicle registration using fingerprints, acquiring of certificates of fitness for the vehicles and change of ownership.
5. E-Border management system which the department of Immigration and citizenry services uses to control its borders

In addition, since 2009, the country has been boasting mobile operations by awarding licences to mobile operating companies. This has increased mobile network coverage in the country to 90% where the majority of users being between the age of 10-35 which hastened the acceptance of ICTs in the country. The government has also taken initiative through current projects on implementation of e-government such as the project for e-readiness in digitising all government department documents and providing internet in schools. In conclusion, Malawi ICT policy (National ICT Policy, 2013) noted that the introduction of mobile government will not only ease the supply of services to citizens but it will bridge the digital divide through enabling citizen e-participation. Mobile application use has already prevailed in Malawi through mobile banking and social network chats.

1.2 Problem Statement

Malawi Government efforts can be appreciated through its investment in ICT infrastructure as well as the implementation of several e-government systems to digitize various MDA's operations. Nevertheless, the implementation of electronic

government in the country has its drawbacks in supplying government services to citizens mainly because of electric supply unreliability as only 19% of the population have electricity access (45% in urban areas and 5% in rural areas) (World Bank, 2023).

In addition, over 80% of Malawi's population lives in rural areas where ICT infrastructure (Internet Connectivity) is less developed, travel long distances as well as lack of ICT skills to access government services (Naidoo, 2012). Mobile devices would play a significant role in the accessing and passing of information in Malawi. Therefore, there is a need to identify critical success factors for implementation of mobile government.

1.3 Research Objectives

The main objective of this research was to identify critical success factors for adoption of mobile government in Malawi. In order to achieve the main objective, the following specific objectives were identified;

- a. Assess case studies for Korea and South Africa to identify critical success factors for their adoption of e-government.
- b. Assess information from the selected countries websites which includes statistical and policy related websites such as ITU, OECD, World Bank.
- c. Propose strategies for the implementation of mobile government in Malawi.

1.4 Research Questions

- a. What are the success factors used in the implementation of e-government in Korea and South Africa that are transferable to Malawi?
- b. How statistical data and policies of ITU, OECD and World Bank is used in e-government implementation?
- c. How can the Government incorporate the use of mobile cellular technologies to improve the provision and reach of government services?

1.5 Justification of the Study

Malawi government has initiated the implementation of mobile services to improve service delivery to its citizenry in line with Malawi 2063 with ICT as an enabler for economic growth. However, literature shows that there are several problems encountered during implementation and use. It was important to explore problems

which would affect the implementation and how they would be resolved to ensure that mobile government adoption meets users' requirements. Other services are already using mobile government services but there are many challenges which need to be sorted out before the full implementation.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter covers the literature reviewed in relation to the topic under study. The chapter also discusses the theoretical framework used to guide the study.

2.1 What is Mobile Government?

Mobile Government is defined as a mode of Electronic-Government that facilitates access to government services with the use of mobile devices. It has been described as an upgrade of the E-Government to improve the efficiency and effectiveness of public services. It has evidently increased active participation of public operations due to the increase in the usage of mobile devices as almost 95% of the world population uses mobile devices (Al-Shboul et al., 2014; Somani, 2012).

Mobile government has been described mostly for what it does in facilitating easier access to government services. It is not a separate entity from the conventional government which involves face to face neither does it separate itself from e-government which has been described by (Lee et al., 2004), as the use of information and services through use of mobile technologies within the government use of information and communication technologies as a tool to achieve better government. The difference with mobile government is that it is as a subset of e-government consisting of an alternative way of delivering governmental information and services through use of mobile technologies within the government administration in order to deliver public services to citizens and firms, (Mengistu et al., 2009). In summary, e-government can then be said to be a value added service for e-government.

Mobile government (m-government) which is seen as a subset of e-government is the delivery of government services through wireless technologies, anytime, anywhere by adopting a diversity of mobile devices.

2.2 Levels of Mobile Government

Mobile Government consists of four major interactions as shown in the figure 1 below. They are based on front office applications which can be used within the government agencies and outside to the citizens as well and the back office applications used only within the government agencies. The interactions are also based on individual or organisational interactions (business or other government departments/agencies).

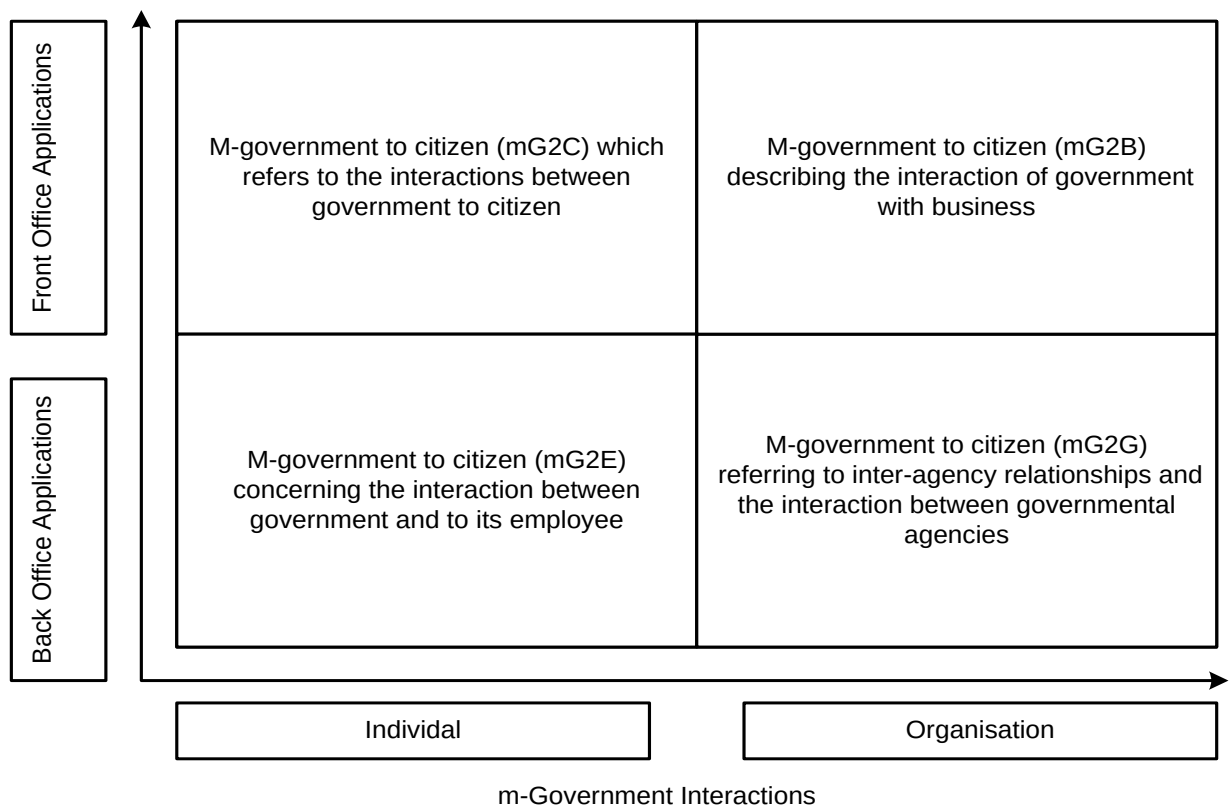


Figure 1.1: Mobile Government Interactions. **Source:** Mengistu et al, 2009

Examining the diagram presented in Figure 1, the initial section focuses on M-government, which aims to improve communication between citizens and their government in two-way interactions: from citizens to government and from government to citizens. Within this framework, M-Services encompass various mobile functions, including mobile transactions, mobile payments, and a range of other mobile-based services.

This diagram is relevant to a mobile government system in Malawi, where the government can disseminate information to its citizens through their mobile devices. Simultaneously, citizens can use these devices to share information with government employees, who have round-the-clock access to information through their gadgets. Additionally, the government can efficiently share business-related information with clients, who can conveniently monitor the status of their businesses using their own devices. Furthermore, this system facilitates seamless information exchange between agencies and external parties, enhancing collaboration and communication.

2.3 Theoretical framework

Mobile communications with the addition of mobile applications has had a profound effect on the livelihoods of people especially those in the remote areas of Malawi. For example, MPAMBA, Zowona and Airtel Money are mobile money systems used in Malawi where people send and receive money without the need of a bank account. Within the same context, according to the “ICT in agriculture e-sourcebook”, November 2011 report introduction of mobile agriculture ensures food security, employment and business opportunities and boosting GDP especially in those economies that depend on agriculture. Hence the above situations indicate the positive side of what a mobile government can do.

In accordance with the above issues, some factors have been identified as being enablers of successful mobile government implementation. (Al-Shboul et al., 2014; Chen et al., 2018; Rababah et al., 2013) listed 18 factors as being enablers of mobile government indicated in figure 2 below

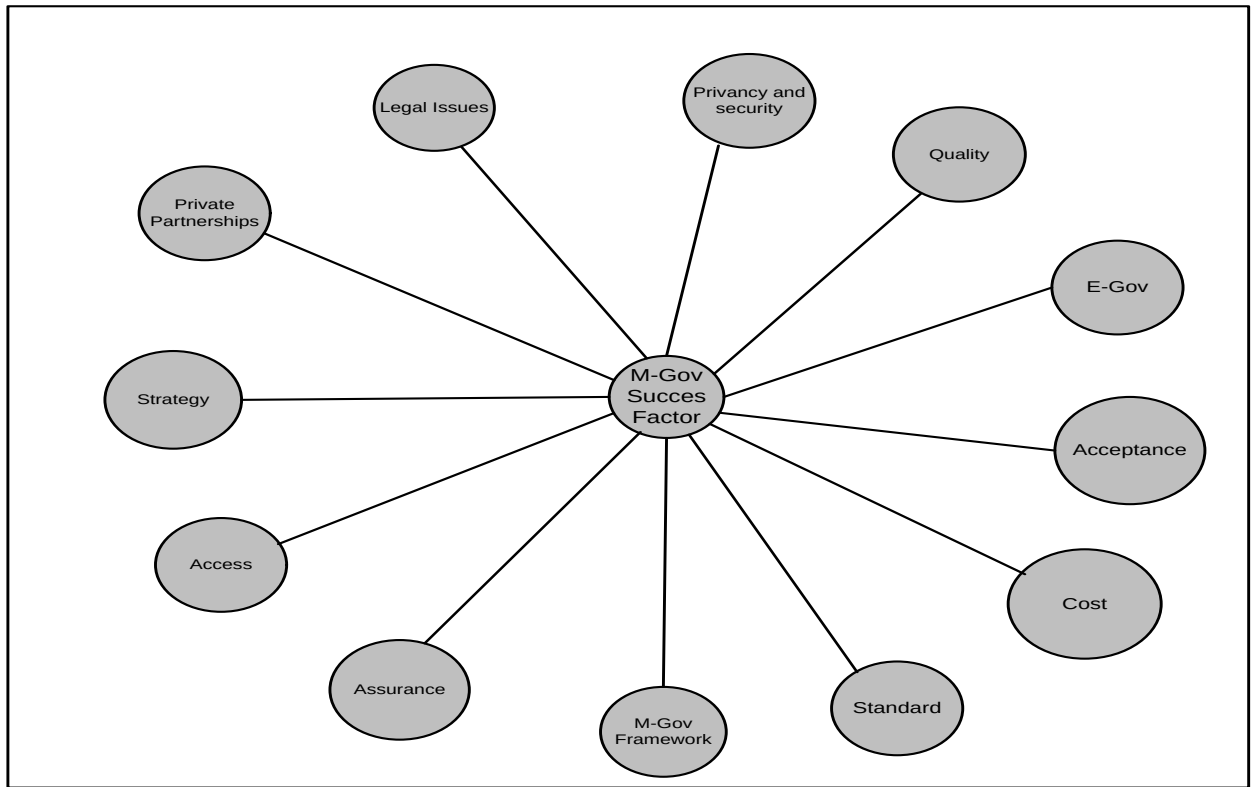


Figure 1.2: M-Government Success Factors. **Source:** Al-khamayseh& Lawrence, 2006

They undertook a survey to obtain the most critical factors for interactive mobile government of which 7 were recognized. The survey was carried out with e-government project managers, government consultants, government officials, telecommunication managers, research directors at national research centres, professors of Management Information Systems and Strategies, and PhD students from 25 European countries, 3 from Asia, 2 from North America and one from New Zealand making it more credible due to various opinion. The factors identified as critical were Privacy and Security, Infrastructure, User needs and preferences, Quality and user friendly applications, Acceptance and Cost.

Another framework that will be used in the study to identify the mobile government success factors is the Critical Success factors model by Chen et al, 2018. The Critical Success model focuses on factors relating to e-government implementation which was highlighted as critical in Al-khamayseh & Lawrence, 2006's study. The factors will include National e-government infrastructure (NEI) factors adopted from a model by

Harvard University for mobile commerce in developing countries. They also included Culture Factors and Society factors as influencing e-government implementation.

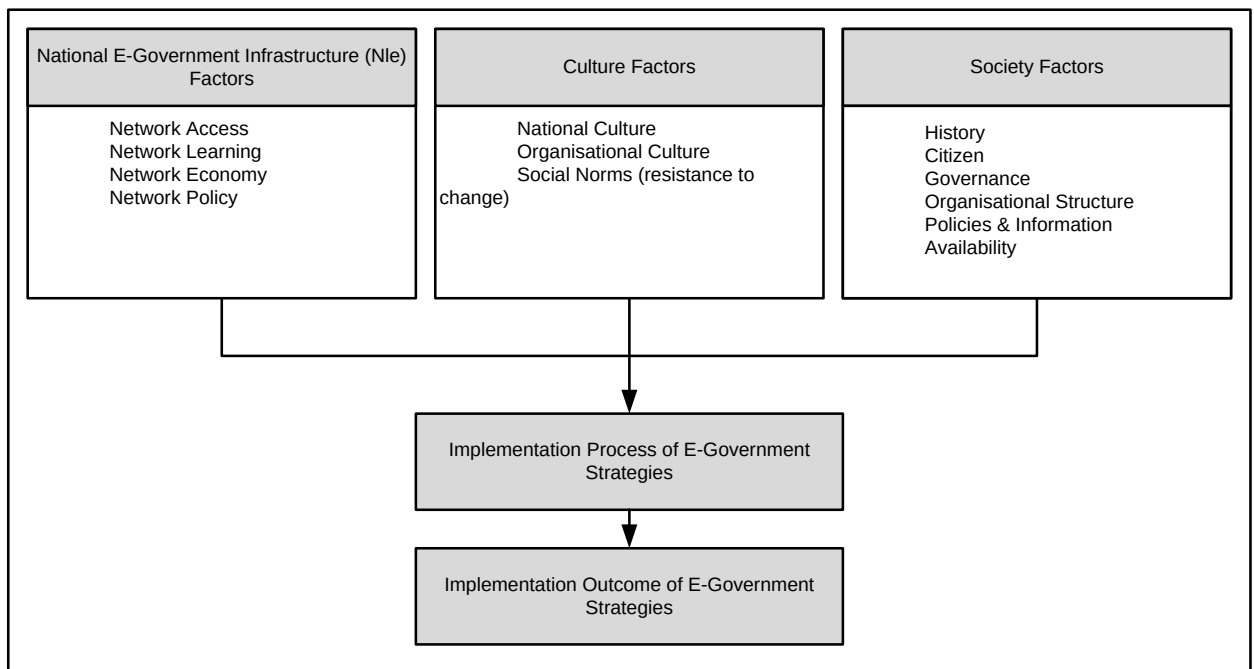


Figure 1.3: Critical Success factors influencing E-government Implementation.

Source: Chen et al, 2018

In their study, it was emphasized that many developing countries tend to adopt strategies from developed nations. However, it is crucial to recognize that these countries possess distinct characteristics. Therefore, both developing and developed countries should formulate strategies tailored to their unique attributes, taking into account the identified factors. To underscore this point, a comparative case study between China and the USA will be conducted. This case study will illuminate the divergent strategies employed by these two countries, utilizing critical success factors to illustrate their impact on e-government implementation in these contrasting scenarios.

In response to the two models a conceptual model based on the factors will be developed to come up with factors suitable for a mobile government for Malawi.

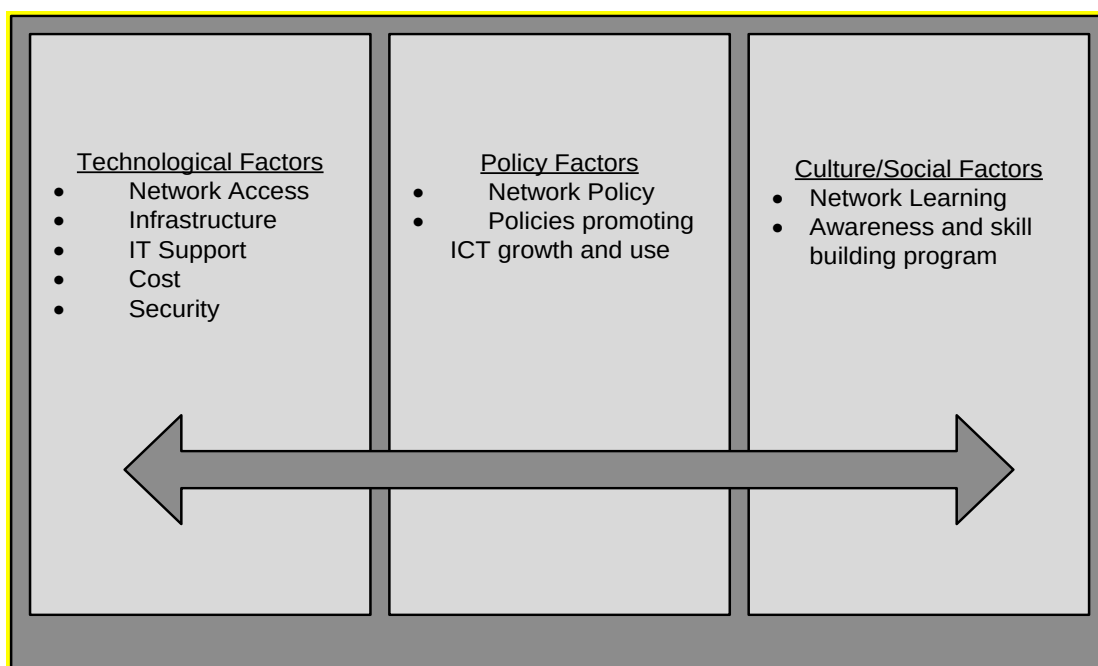


Figure 1.4: Conceptual Framework

The above factors were divided into three categories according to the previous mentioned frameworks. They were identified as being critical for successful m-government implementation and consisted of sub factors to specifying the categories. The division was based on that some of the factors overlapped between Chen and Al-khamayseh frameworks and also the degree of impact on implementation. These comprised the technological, policy and culture/social related factors.

Under technological factors, Infrastructure represents the mobile network communications, backbone infrastructure, hardware and software (including e-government system) facilitating the provision of government services. Infrastructure was identified as the cornerstone of m-government by (Abrahams and Goldstuck, 2010; Gillwald & Kane, 2003). Mobile government infrastructure is made up of wireless networks and mobile devices such as mobile phones, PDA, laptops among others, Forglu, (2005). According to Chen et al, 2006, infrastructure development is necessary before a country can undertake a project dedicated to e-government. They go on to talk about access of services and use by citizens and also back-office infrastructure as important for effective e-government systems hence highlighting the importance of infrastructure.

IT Support is also a critical technological factor, which can involve outsourcing and also private sector initiative in cases of system development promotion or financing. Devices should be affordable (Al-Busaidi, 2012) as well as an affordable cost to access services. This cost correlates to acceptance (Rababah *et al.*, 2013; Al-khamayseh *et al.*, 2006) which will enable more people to use the m-government systems hence lowering costs as well. Lastly on Technological factors is security, users tend to be reluctant to use the mobile devices in fear of manipulation of their data on a mobile device. There is a need for innovative ways to ensure security of data. In Al-khamayseh *et al.*, 2006's study Privacy and Security was rated as the most critical factor for m-government. Abrahams and Goldstuck (2010), suggested that standards of wireless networks security should be followed such as the Wireless Equivalent Privacy, 802.1x protocols and Cisco lightweight Extensible Authentication.

Policy factors are adopted from network policy, legal issues and standards dimensions mentioned in the theoretical frameworks. These concern documents such as legislations, laws, strategic plans among others. It is concerned with the level to which the policy environment promotes or hinders the growth of ICT adoption and use (Chen *et al.*, 2006). Effective policy development is necessary to allow efficient and effective government service delivery. Hence there is a growing need to review policies due to changing technology in terms of government service delivery.

Lastly the final critical success factor is social and cultural aspects' influence on mobile government implementation. IT adoption is affected by culture in every society.

Evans and Yen mention that government systems should be there but should not aid in the diminishing of one's cultural heritage. These cultures include certain religious beliefs, or backgrounds which can affect adoption and use of technology. Also social norms like society's influence on adoption of IT (trust, confidence in using technology would bring benefits), history of a country (D'Ambra, Bhalla, 2002) which can be either war, drought or inflation and issues such as organisational culture and structure are part of the societal factors. A study by Parent, Vandebek and Germino, highlighted that citizen's engagement together with maintaining a good website result in successful e-government, more interaction and trust by citizens.

Still on the culture concept gender is also an influence on adoption of m-government systems. Nysveen, Edersen and Thorbjørnsen claim that men tend to have a higher self-efficacy and computer aptitude than women. The main problems of adoption are as a result of lack of information on awareness of the benefits of ICTs in government service delivery. Hence to overcome this defect, awareness and skill building programs are key social/culture factors for successful adoption of m-government. Chen et al 2006 mention that politics and information availability have significant impact on the speed of infrastructure establishment and hence should be considered.

CURRENT STATUS IN MALAWI

2.4 Country Profile



Figure 1.5: Malawi Map

Malawi, a landlocked country in south eastern Africa is defined by its topography of highlands split by the Great Rift Valley and enormous Lake Malawi. The Lake's southern end falls within Lake Malawi and National Parks- sheltering diverse wildlife from colourful fish to baboons- and its clear waters are popular for diving and boating. Malawi is bordered by Mozambique, Zambia and Tanzania. The country covers an area of 118,484 sq km with a tropical climate. Malawi is divided into 3 regions (Northern, Southern, Central) and it has 28 districts. The capital city is Lilongwe. Total population stands at 15.9million. The people are heterogeneous and official languages are English and Chichewa. The Malawian currency is the Malawian Kwacha.

Table 1.1: Malawi Statistics

ITEM	NATIONAL RATE
GDP	\$6.57
ICT Development Index	1.61%
Literacy rate	62.7%
Mobile Penetration	38%
Internet Penetration	1.9%
Fixed line per 100 people	6.8%

2.5 IT Infrastructure

The mobile communication industry in Malawi has 2 major players Telecom Networks Malawi and Airtel with two fixed line operators Malawi Telecommunications (MTL) and Access Communications (ACL) who have been given a chance to enter the mobile market. The telecommunications regulator is Malawi Communications Regulatory Authority (MACRA).

2.6 Policy Initiatives

The progress of e-government development in Malawi is currently underway, marked by significant government efforts, including initiatives like the last-mile connectivity and infrastructure distribution for internet access. In a pivotal study by Ruhode et al. (2008), a transformative model (see Figure 12) was developed to enhance the efficiency of e-government implementation. This research also yielded valuable recommendations for the successful adoption of e-government.

The study shed light on the challenges associated with traditional government service delivery. It proposed solutions such as Enterprise Resource Planning (ERPs), database integration, and the establishment of an e-government portal. Notably, it underscored the opportunities presented by the presence of an ICT policy framework and a skilled workforce. Collectively, these findings make a compelling case for the feasibility of implementing an e-government system in Malawi.

Encouragingly, some of the recommendations from this research have already been put into action and are currently operational. This includes the availability of government websites where individuals can readily download forms and access pertinent information, signalling tangible progress in Malawi's journey toward a functional e-government ecosystem.

Hence Malawi is currently at Stage 1 or 2 of e-government development.

The government of Malawi developed a number of policies have been developed towards promoting a significant starting point towards adopting e-government as shown in the Table below.

Table 1.2: Malawi ICT Initiatives by government

ICT Initiative	Brief Description	Year Implemented
National ICT Policy	Providing direction as to how Malawi will turn the ICT potential into real benefits for its people.	2013
Single Government- Wide Web Portal (draft)	To pull government information and services to one access point	2015-2019
E-Transaction Bill	Regulations and laws for ICT sector	2016

The National ICT policy Framework was developed as a guide for implementation for ICT strategies and programmes within the public and private sector. The objectives of the National ICTs Policy Framework were;

- ❖ To provide sustained high level ICT leadership and championship oversight, inspiration and political goodwill.
- ❖ To increase access to healthcare, education and training facilities through ICT utilisation.
- ❖ To develop the ICT infrastructure in order to improve access and delivery of services as well as reduce communication costs.

However, looking at all the issues discussed and all the surveys done to assess the country's readiness to become a knowledge society in Malawi got 2.86 out of a score of 4 (electronic journal of e-Government volume 11 Issue 2 2013). However, the score was low but it was highlighted that:

- ❖ Government possesses an immense potential for e-Government (C2G) online communication
- ❖ Most of the online communication is G2B and G2C, but there is no citizen-to-government (C2G) online communication
- ❖ The institutional mechanisms for ICT are not well defined and coordinated
- ❖ There is no government policy framework for the development of e-Government

The findings indicate some progress on ICT-based efforts by the government but in an uncoordinated manner due to the absence of an all-embracing ICT strategy (Ruhode et al, 2008). There is also Government deployment of Fibre cable across the country to allow last mile connection and has already connected to Tanzania Submarine as of July 2016.

2.7 Private Sector/ Academia initiative

The private sector has also greatly contributed towards the promoting mobile services. There has been deployment of fibre cable and broadband infrastructure which is still taking place to allow last mile access. There has also been deployment of solar panels in rural areas so that people are able to charge their phones even in areas that don't have electricity. Mobile telecommunications companies' developed mobile applications such as TNM Mpamba application & Airtel money applications to encourage the use of mobile cash transfer. The academic institutions have also contributed by developing web-based systems / applications through various IT universities in the country. The application has to do with helping the health sector in accessing health services through mobile phones. Now we have other services like Zoono but you can also use your phone to conduct transactions since almost all the Banks are linked to the mobile service providers.

CHAPTER 3

METHODOLOGY

This Chapter outlines the methodology that was used to undertake this study, the reason behind the usage of this methodology as well as various studies that were done using the similar method.

This study was conducted using desk Research, to be precise an External Online Desk Research because the research used online/ internet papers to compare how Mobile-Government is conducted in South Africa and South Korea in order to identify the gap in Malawi. Therefore, the researcher used the case studies in these countries to learn and see how Malawi can successfully implement M-Government.

South Korea was selected because it is ranked first in the ICT Development Index, topping the list for two consecutive years. South Korea leads the world in broadband Internet access penetration and it is a leading example of a country rising from a low level of ICT access to one of the highest in the world. As stated earlier, the level of South Korea's digitalization is ranked 1st for three consecutive years in ITU'S Digital Opportunity Index. For example, their e-Customs system called UNI-PASS that was established to complete an online export and import system for the first time in the world, Korea Customs Service won the WCO (World Customs Organisation) Trophy in 2006 for intellectual property right protection with the fastest customs system among 169 member countries (MOPAS, 2008). The 24-Hour e-services for the Public won second place in the category of improving the delivery of public services. Moreover, there have been an increasing number of developing countries that are planning to learn from South Korea's case by benchmarking it for their own countries and we were just part of that in this study.

South Africa was chosen as it was among the top 5 countries in Africa which has a high ICT adoption in Africa with 46.1 points internet penetration and most of its Government Services were being provided using mobile technologies to assist the

citizenry. Currently, South Africa is ranked first in technology adoption in Africa and they have the highest number of cellular connections in Southern Africa which is closer to Malawi and their culture and characteristics resemble much.

To begin with, desk research also commonly known as Secondary research is a type of research that is undertaken through the gathering and analysis of previously existing data. It is the opposite of Primary Research where the participants collect data from various sources and analyze it. Desk research is performed on a desk because it does not interact with people to collect data first-hand but merely the researcher finds, collects and reviews the publicly available information from the internet, newspapers articles and magazines about the research topic. Desk research is categorized into Internal Desk Research and External Desk Research. The Internal Desk Research uses data within the organization while the External Desk Research uses data collected from external sources such as the internet. Various organizations prefer this type of research because it does not require much time and cost effectiveness which helps the researcher to understand the research fast and at a low cost. It is also reliable because all the data used in the research are publicly verified. However, this method has also been criticized for using unreliable data as they can be outdated and it can be difficult to find specific data to the topic being researched. Therefore, in addition to its inexpensiveness and less time consuming the method was used because it is very helpful in making well-informed decisions which is expected after the study (Alexanda et al, 2015 & von Naso, 2018).

In 2020, the World Food Program conducted a desk study to review food security. The purpose of the study was to identify key factors affecting vulnerability to food insecurity for a particular population within the geographic area that helped to determine the scope and objectives of Comprehensive Food Security and Vulnerability Analysis (CFSVA). During this study, various documents and historic data from the Government, NGO's, professional and academic institutions as well as internet websites were analyzed to determine how factors like socio-economic and demographic data, livelihood information, institutional processes and structures affects food security that provided a good understanding of the food security situation and to uncover data gaps. (WFP, 2020).

The European Union also did a Desk research on social impact tools and resources. The research analyzed academic and research tools (comprised of academic/ scholarly studies/ case studies/ books/articles), projects and initiatives run by youth/NGOs, official reports of project activities and evaluation and web resources, blogs which emphasised the importance of learning mobility. The study focused on the 5 pillars selected as the result of trends in contemporary research and existing practices within the youth field namely civic engagement, Quality, Competencies, Social impact and Youth policy. The pillars are important for identifying resources and ensuring their visibility, and for identifying gaps and enabling the development of new tools and resources for each of the subject areas (Ignatovitch et al., n.d.).

In conclusion, this chapter outlined the method used for the research with its advantages and disadvantages. It also includes some of the example in which the Desk study was used to undertake research. Therefore, Chapter 4 outlines how the Desk methodology was implemented.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

As outlined in the previous chapter, this chapter summaries how the analysis for the study was carried out. After gathering data from various sources from the internet, case studies were used to identify success factors used in Korea and South Africa in the implementation of Mobile Government as outlined below.

4.1 CASE STUDIES

4.1.1 Republic of Korea



Figure 4.1: KOREA MAP

The Republic of Korea also known as Korea is located in South-Eastern Asia in the southern peninsula (hence South Korea). It is boarded by North Korea, the East Sea on the right and the Yellow sea on the left. The area stands at 100,210 km with a mountainous terrain, wide coastal plains in south and the west and temperature climate.

Korea is divided into 9 provinces (Gyeonggi, Chungcheon-bukto, Chungcheon-namdo, Gangwon, Gyeongsang-bukto, Gyeonsang-namdo, Jeju, Jeolla-namdo) and 7 metropolitan cities (Seoul, Daejeon, Busan, Daegu, Incheon, Ulsan, Gwangju).

The capital city and largest metropolitan city of Korea is Seoul. The total population is 49 million, with 83% staying in the urban areas. The people are Homogenous and the official language is Korean. The Korean currency is the Korean won (KRW)

Table 4.1: Korea statistics

KOREAN GDP INDUSTRY GROWTH USING ICT AS A CATALYST

ITEM	NATIONAL RATE
GDP	\$32,100
ICT Development index	0.9283
Literacy rate	97.7%
Mobile penetration	108.5%
Internet penetration	83.3%
Fixed line per 100 people	60.9%

The Republic of Korea is mostly known for its success named the “miracle of the Han river” where its GDP moved from a mere \$79 in 1961 to the current \$32,100 in just 60 years. This is attributed to President Park Chunghee who promoted industry growth and led the country to become one of the world’s IT super houses due to its vast range of technologies. The major leading companies promoting electronics are Samsung and LG and for heavy industry there is POSCO dealing in steel, Hyundai for construction, shipbuilding and vehicle manufacture. Other economic contributors are petrochemicals and robotics. The mobile communication industry in Korea has 3 major players SK, KT and LG where the dominant group is SK whose market is above 80%. The wireless access technologies available are WCDMA, HSDPA, LTE, TD-SCDMA, CDMA2000 EV-DO mobile WiMAX (WiBro). For fixed line KT is the major provider with a market share of more than 90%. The telecommunications regulator is the Korea Communications Commission (KCC).

4.1.2 Korea E-government Development Stages (NIPA, 2012)

Timeline of E-Government Development:

1. Inception - Building Administrative Networks (1987-1996): Early stages of administrative computerization.
2. Implementing Administrative Computerization (1978-1987, 1978-1996): Efforts to implement computerization in administration.
3. Foundation - Promoting Informatization (1996-2000): Establishment of the groundwork for nationwide broadband networks. Enactment of the framework Act on Informatization promotion.
4. Launch - 11 Major Tasks for E-Government Services (2001-2002): Introduction of the Act on e-Government, encompassing e-civil service, e-procurement, and NEIS.
5. Diffusion - 31 Major Tasks for E-Government Services (2003-2007): Execution of 31 e-Government projects, including the sharing of administrative information.
6. Maturity - Expansion of Integrating E-Government (2008): Integration of systems for national informatization.
7. Integration of Systems for National Informatization (2008): Further expansion of integrated e-Government systems.

Korea began implementing e-government from 1978 towards attaining the highest E-government Development Index in the world. The government set up strategies and policies in order to promote government service growth and use with the aid of ICT. The figure above illustrates some of the e-government development which is now at maturity where the government is looking at converging government and mobile communications and also strengthening their current infrastructure.

In 1978, the government computerised all government departments, agencies (back-office systems) and connected them to the internet. From 1996 to 2000 the government promoted informatization by building backbone infrastructure and policies promoting informatization. From 2001 Korea founded e-government development, setting up strategies towards an effective government system till now. In the maturity stage focus is on converged and multi-channel delivery of public/civil services.

Examples of these projects include an e-customs system called UNI-PASS which is an online export and import system. Other examples were the five National Computer Network projects which had systems like Infrastructure establishment project, National Basic Information Project, Resident registration system, Vehicle registration System and Real estate system.

4.1.3 Critical Success Factors

- ❖ **Policy factors** are part of the contributors towards the success of Korea's Infrastructure which is rated among the best in the world. Korean e-Government projects were aligned with performance evaluation to ensure successful implementation.

4.1.3.1. Government Investment

- ❖ 1% of the national budget was invested into e-Government construction every year.
- ❖ The government focused on Customer Oriented e-Government Services those with the most potential to impact everyday lives of citizens, such as resident registration, vehicle, customs clearance, employment, statistics management were given first priority, which became the foundation for e-Government. These include Korea's e-Customs, e-Procurement, and e-patient solutions.
- ❖ In 1995 the Korean government developed a strategy;
- ❖ The Korea Information Infrastructure (KII) to construct an advanced nationwide information infrastructure consisting of communications networks, internet services, application software, computers, information products and services.
- ❖ The internet penetration at that moment was less than 1% hence KII was there to extend internet services to the public.
- ❖ The KII was also there to promote utilisation of government services via the internet and also facilitate fast broadband access.
- ❖ The KII project was divided into three categories, the KII-G, KII-P and the KII-T. KII-G was there to provide internet service to government departments and agencies, schools, universities, research institutes.

- ❖ By 2000 December all schools were connected to the internet. The KII-P was for Internet Service Providers (ISP) so that they could offer services to the public (last mile connection/ final users).
- ❖ Finally KII-T, which was to link research institutions so that they share information on next generation technologies (already linked with the USA). It was also known as the KOREN; Korea's Advanced Research Network.

One of the recent legislation by the Korean government is the Master Plan for the Next Generation e-Government (2008-2012). Key tasks are to accelerate government innovation and contribute to improving national competitiveness. It is based on the five strategies below;

- ❖ Offering a demand-based vision and action plans utilising ubiquitous technology
- ❖ Service Integration Based on the Needs of Citizens and Businesses
- ❖ Intelligent Administration Service System
- ❖ Real-time Public Safety Information Network
- ❖ Strengthen e-Government Basic Infrastructure

Other policies and strategies include:

- ❖ The E-Korea Vision 2006, U-Korea Master Plan, 2003, Broadband IT Korea Vision 2007 among others.
- ❖ They were mainly to make possible internet access in communities and also address rising needs of citizens and businesses and also moving with the environmental trends and changes.
- ❖ This resulted in an increase in the number of internet users from 3 million to 33 million between 1998-2005 which was 72.8% of the population. In 2004-2010:
- ❖ IT839 Strategy and broadband convergence Network was particularly for issues in relation to globalisation and the digital divide. The U-Korea Master Plan: 2006-2010 was a step in changing policy needs in the mid-2000s and lastly the VISION 2030: Hopeful Korea in Harmony (2007) addressing user needs.

4.1.3.2 Technological factors

- ❖ Some of the major strategies promoting technology development in Korea were the KII, August 1995, the Framework Act on Information Promotion and Cyber Korea 21.
- ❖ Cyber Korea21 was in response to the IMF crisis. It included support for the software and IT components industries, promotion of foreign market penetration; improvements in IT education and close digital divide by increases in the PC penetration rate.
- ❖ In the KII plan the government promoted competition to allow fast broadband deployment, also for broadband hardware and software development.
- ❖ There was investment support for infrastructure by the government in the national budget. In 1999, the government provided US\$77 million in loans with preferential rates to facilities service providers (FSP).

In 2000, another US\$77 million was provided in loans for suburban areas, small cities and towns, and regional industrial areas. Another US\$929 million was provided until 2005 in order to supply rural areas with broadband. For informatization, the main sources of Informatization Promotion Fund were spectrum and licence fees from operators, it was not only used for government IT projects but also for R & D and investment of the private operators. The new ventures/service providers repaid loans through the discount of telecom service fee to public organisations (Challenges and Success Factors in ICT and e-Gov Development via Korea Experiences).

There was also support of specialised e-government technical agencies (NIA, ETRI, KISDI, NCA, KIPA, Korea Local Information R&D Institute) and collaboration with system integration companies and specialised solution vendors. The structures for roles in e-government were also divided as shown below;

President's Council on Informatization Strategies (PCIS)

- ❖ Establish Visions for e-government
- ❖ Coordinate & evaluate e-government initiatives

Respective ministries

- ❖ Formulate and implement action plans for e-government projects

Ministry of Public Administration & Security (MOPAS)

- ❖ Establish e-government policies
- ❖ Construct government-wide infrastructure

National Information Society Agency (NIA)

- ❖ Provide institutional and technical support for carrying out e-government projects

The government enacted a software development promotion act in 1987 which had led to development of top class systems. Some of the e-government systems have received international awards and been certified by the United Nations and are also being used in other countries. The number of officially supported applications is expected to reach 1000 by the year 2015. (NIA, 2012)

Korea government Systems (NIPA) not done

In terms of security Korea had a Mobile digital signature NPKI developed under the (Digital Signature Act, 1999) for mobile commerce. This ensures that users' information is not manipulated once one uses a mobile device to access his or her information. To get user suggestions or complaints the government has a Mobile E-People Application. This was mostly due to the growing demand for mobile services. Hence it looks at utilising the technology available (complaints, proposals, policy discussion, single window for communication) for better governance through mobile services.

Results

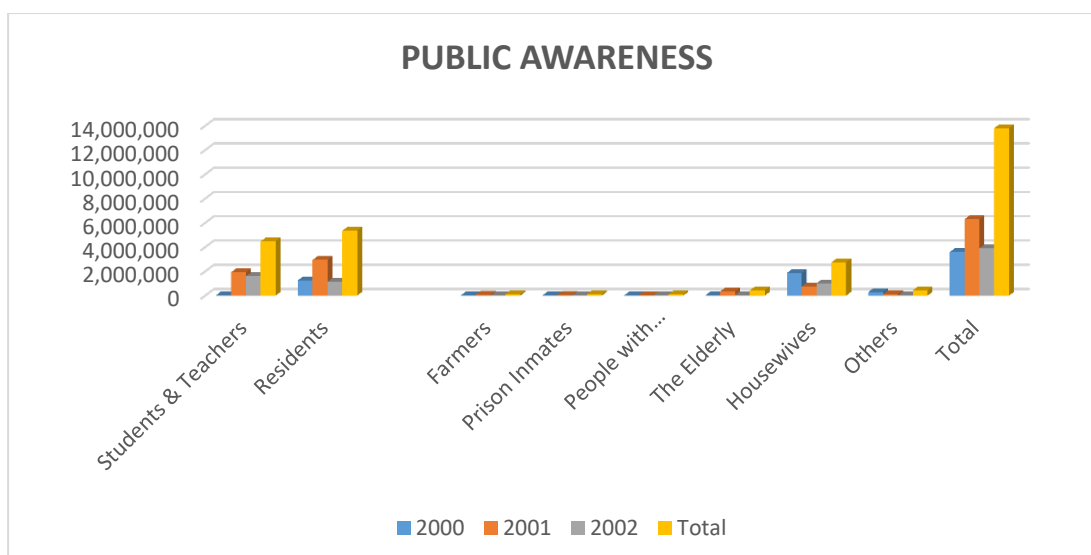
- ❖ As of 2009, 122 players provided fixed broadband services, including eight fixed telecoms operators and 114 local operators and cable TV operators. (World Bank October 2009)
- ❖ More than 90% of households located 4km near local exchanges had access to the internet.

4.1.3.3 Social/ Cultural Factors

The Korean government knew that in order to have effective use of government e-services the public needed to be educated and made aware not only of the benefits of using but also of the existing services being offered online. This would also result in trust by citizens on use of the technology the government ICT mandatory as part of the curriculum. This project was called "Ten Million People Education Project " in June 2000 which was an IT and internet literacy programme targeted at homemakers, the elderly, military personnel, farmers. There were 10 million broadband subscribers in Korea by October 2002.

Hence the Government seeing the program was successful they provided subsidies to private institutes so they could provide the courses at an affordable price.

TYPE	2000	2001	2002	TOTAL
Students & Teachers	53,734	1,929,331	1,598,339	4,481,404
Residents	1,265,062	2,949,937	1,143,841	5,358,840
Farmers	33,161	75,738	20,271	129,170
Prison Inmates	23,075	70,767	26,356	120,198
People with Disabilities	13,680	47,354	39,544	100,578
The Elderly	36,330	361,875	44,530	442,735
Housewives	1,870,521	746,891	1,020,852	2,738,264
Others	299,947	124,212	9,844	434,003
TOTAL	3,595,510	6,306,105	3,903,577	13,805,192



Another project towards awareness was the Dynamic IT Korea 2008 (2005) and KADO 2008 where recycled and new computers were distributed to school children of low-income families. There were also programs for the various disadvantaged groups such as the interpretation service for the deaf so they can communicate with others. There was also the setting up of community centres with free access particularly to low-income and those in remote areas.

Table 4.3: Statistics of trained disadvantaged groups by sector (NIA)

Ministry	Subject for education	Education personnel			
		2000	2001	2002	Total
Ministry of Health and Welfare	The Disabled	-	41,280	41,280	82,560
	Seniors	-	35,400	35,400	70,800
	Sub-total	-	76,680	76,680	153,360
Ministry of Agriculture and Forestry	Farmers	30,756	70,080	70,080	170,916

Ministry of Maritime Affairs and Fisheries	Fishermen	5,000	7,500	7,500	20,000
Ministry of Labor	The Disabled	2,265	20,690	41,215	64,170
	Laborers	200,000	600,000	700,000	1,500,000
	Sub-total	202,265	620,690	741,215	1,564,170
Ministry of Information and Communication	Housewives	700,000	700,000	600,000	2,000,000
	The Disabled	15,000	20,000	25,000	60,000
	Seniors	20,000	35,000	45,000	100,000
	Local residents	20,000	30,000	50,000	100,000
	Sub-total	755,000	785,000	720,000	2,260,000
Ministry of National Defense	Military service men	200,000	270,000	270,000	740,000
Ministry of Justice	Inmates	1,412	4,800	4,800	11,012
	Delinquent juveniles	2,930	7,330	10,330	20,590
	Sub-total	4,342	12,130	15130	31,602
Ministry of Education	Elementary, middle and high school students (Students of low income		1,429,831	1,434,029	2,863,860

	family)	(500,000)	-	-	(500,000)
	Teachers	224,931	195,000	195,000	614,931
	Sub-total	724,931	1,624,831	1,629,029	3,978,791
Ministry of Government Affairs and Home Administration	Local residents	500,000	500,000	500,000	1,500,000
	Government employees	510,000	(510,000)	(510,000)	510,000
	Sub-total	1,010,000	500,000	500,000	2,010,000
Ministry of Planning and Budget	Officers and employees of public corporations	70,000	70,000	60,000	200,000
Total		3,002,294	4,036,911	4,089,634	11,128,839

When you look at the table a lot of the disadvantaged have benefitted through the awareness which we seem to lack here in Malawi.

Apart from that MACRA introduced telecenters in many districts which are not being utilised at the moment and some have died a natural death because of poor management. When you look at the telecenters in Malawi people have to pay to access the services in those areas including the disadvantaged which was not a case in Korea so we need to do something in that area as a country.

4.2 South Africa

4.2.1 Country Profile



Figure 4.2: South Africa Map

Officially known as the Republic of South Africa, it is located in the southern part of Africa boarded by five countries (Namibia, Botswana, Zimbabwe, Mozambique and Swaziland) including the Atlantic and Indian Ocean. It hosts a country inside its boarders named Lesotho. South Africa is 1,214,470 km square in area with a semiarid and subtropical climate and terrain of vast interior plateau rimmed with rugged hills and narrow coastal plain. The country is divided into 9 provinces (Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West and Western Cape) has 9 major cities (Pretoria, Durban, Port Elizabeth, Bloemfontein, Johannesburg, Cape Town, Polokwane, Upington and Kimberley). Distinctively South Africa has 3 capital cities; Cape Town which is regarded as the legislative capital since it houses the house of parliament, Pretoria is the administrative capital, and Bloemfontein is the judicial capital. The total population is 49 million, with 62% staying in the urban area. The people are heterogeneous; hence they have 11 official languages (Zulu, Xhosa, Ndebele, English, Sotho, Afrikaans, Tswana, Tsonga, northern Sotho and Swati, Venda). The South African currency is the South African rand (ZAR).

Table 4.4: South Africa Statistics

ITEM	NATIONAL RATE
GDP	\$11,100
ICT Development index	0,4306
Literacy rate	86.4%
Mobile penetration	127%
Internet penetration	21%
Fixed line per 100 people	8.1%

The mobile communication industry in South Africa has 4 major players MTN, Vodacom, Cell-C and Virgin mobile with the dominant market share holder being Vodacom at almost 50%. The wireless access technologies available are WCDMA, HSDPA, LTE, TD-SCDMA, CDMA Ev-Do mobile WiMAX (WiBro). For fixed line Telkom has the largest market share. The telecommunications regulator is the Independent Commission Authority of South Africa (ICASA).

4.2.2 Critical Success Factors

4.2.2.1 Policy Factors

The South African government's initiative towards successful mobile government includes policy development. The government enacted an Electronic Communications and transaction act (ECT), no. 25 of 2002 in order to facilitate and regulate electronic communications and transactions. It involved issues such as access, authentication, consumer protection and consumer protection and cyber-crime issues (Heginbotham, 2006). In order to have better government service delivery the government also developed the "Batho Pele-people First"; a white paper on transforming Public Service Delivery 1997. This provided a policy framework and practical implementation strategy for transforming public service delivery (DPSA, 1997). Equal opportunity for Access, Information and Openness and Transparency of government e-services was also focus of the strategy.

Other legislations that were being used included Universal Service Agency (USA), to ensure telephone and advanced communication access to all. Hence the legislation

was granting licenses to small and medium-sized enterprises (SMEs) to roll out services in underserved areas (Gillwald, 2005). May 2005 monopoly was ended by licensing first SNO, Neotel (Fin24, 2005) to enable competition and rapid Internet diffusion. There was also a convergence bill for integrated infrastructure for delivering voice, video, and data services at high speeds and lower costs (Gillwald, 2005). This was probable since the number of smartphones sold in South Africa reached a critical mass, with more than 5 million were in use. That has led to sharp increase in mobile Internet access in South Africa which is likely to continue as Smartphone penetration intensifies. It was projected that by 2013, more smartphones than normal phones will be sold in South Africa (Pienaar, 2010). By 2014, it is possible that the Internet user base will reach 10 million, accounting for more than 20% of the population. Government allowed that infrastructure to be partly owned by the private sector. For example, the Department of Communications changed its decision that SEACOM undersea cable should have majority government shareholding. That decision resulted in investment of infrastructure, IT start-up companies and IT marketing campaigns. Hence in 2008 there was a high rise in the number of Internet users in South Africa.

4.2.2.2 Technological Factors

Predominantly all domestic connectivity for fixed and mobile was handled by Telkom, a government parastatal (Gillwald and Kane, 2003). As of 2003 to 2004, additional government broadband services were introduced such as Sentech, a broadcasting division (Goldstuck, 2004a). Virtual ISPs were also introduced hence stimulated the ISP market as barriers to entry like the high infrastructure and bandwidth were removed and enabled competition removing monopoly in the telecommunications industry. The Virtual ISP led to an increase from 7 to 270 ISPs between 1994 and 2003. Partnerships also paved way for infrastructure deployment and access to public, for example the government allowing infrastructure to be partly owned by private sector and partnering in fiber cable deployment projects by Vodacom, Neotel, MTN and also by government companies Broadband Infracore providing national fiber grids along railway lines and Ezi-tel managing the fibre network alongside all power lines.

In terms of Software Development, a mobile health system was developed. The mhealth enterprise system Intertel is a cell phone-based medical interpretation service in 32 different South African languages for medical interviews and patient communication, Cell-life which is government's HIV testing campaign, using donated phones and eThekwini use cell phones in monitoring and management of Tuberculosis patients (Mobenzi. [http://www.businessday.co.za/articles/Content.aspx?id=145606]

4.2.2.3 Social/ Cultural Factors

- ❖ An informed community is key to successful governance. This can be aided through programs making the public aware and building their ICT skills. This task usually requires a government lead role.
- ❖ For South Africa the government deployed wireless broadband to 500 Dinaledi schools (considered centres of excellence,) clinics, hospitals, libraries, post offices to increase the uptake and usage of ICTs (Government Gazette, 2008).
- ❖ It also established Multi-Purpose Community Centres (MPCCs) to offer access to telephone, fax, and Internet in disadvantaged areas (CPSU 2003). Internet dial-up calls billed at local call rates, regardless of distance, helping reduce costs for rural access (AIS 2000).
- ❖ All public universities and technikons (polytechnics) had internet connections as well (Riordon, 2001). One of the interesting initiatives was the E-Cadre; a South African Post Office (SAPO) project where IT graduates volunteers educated the public on the use of ICTs (Department of Communications, 2008a). They used wireless internet labs for distance education; and computer centres in informal settlements using converted containers to provide training. The Zuza Software Foundation also provided disadvantaged schools with refurbished computers and free support with translated computer software into various official languages of South Africa.
- ❖ Another project for awareness and IT skill building is the streetwise project which involved a terminal that connects to internet with online encyclopaedias; multilingual dictionaries; e-mail; curriculum based worksheets and tests.

STUDY RESULTS

The above comparisons highlight what each country has done as an initiative towards improving government services through ICT.

	Malawi	South Africa	South Korea
Technology Factors	-Fibre Deployment by government and the private sector -Mobile application development promotion by TNM	-Partnership in fibre deployment -Licensing Virtual ISPs to speed up internet -Government licensing SMEs for infrastructure services roll out and support for Research and Development -SMS/ Mg2C	-Government investment for IT industry development, R&D, infrastructure -Specialised government agencies for e-government development -Government loans for new venture start-ups. - SMS/MG2C/Mg2B/MG2G
Policy Factors	-National ICT policy -E-transaction bill -E-government strategic plan	-Batho Pele-people first transformation of government services -Legislation granted licences to small and medium-sized enterprises	-Korea Information Infrastructure ('94'-97) -IT839 Strategy and Broadband Convergence Network, CyberKorea21, Dynamic IT Korea -Master Plan for the Next Generation e-Government
Social/ Cultural Factors	-Internet connection and computer deployment in schools -ICT mass literacy program for the rural	-Government deployment of wireless broadband -Cheap internet access for rural -Established Multi-Purpose Community Centers -IT graduates volunteers educating public on ICTs	-Ten Million people Internet Education project (June 2000) -ICT awareness programs for disabled and old -Setting up community centres with free access -integration of government departments systems

When you look at that table you will see that there are a lot of differences between Malawi and the other two countries. Malawi could also licence SME for infrastructure as South Africa did if policies were put in place to help those involved in that business with a conducive working environment which as of now is not there.

When you look at Malawi as a country it does not have agencies for e-government which is different from the way South Africa and Korea operate. They tried to come

up with an agency but it just ended in vain. As of now they rely on E-government which is a department for the Government to carry out all projects in relation to e-government. Looking at our economy and the culture of Malawians, they cannot afford to give grants for new start-ups, which is another area of concern.

When you look at our policy it is almost obsolete since it has taken long for it to be passed and by the time it was being passed most of the things have changed as far as technology is concerned so we may be a way back if we compare our policy to that of South Africa and Korea.

Similarities in social factors include ICT awareness programs; IT graduates volunteer educating the public on ICTs. Differences include Malawi internet is expensive while in other countries it is cheap, in Malawi there is no integration of government systems while in other countries there is integration, in there is an establishment of community centres but many are not working in other countries mentioned they are working.

This could be better structured in a table:

Entity	Description	Key Differences with Malawi
Infrastructure Licensing (SMEs)	Licensing Small and Medium-sized Enterprises for infrastructure development	Other countries have supportive policies for SME infrastructure licensing, while Malawi lacks such policies.
E-Government Agencies	Specialized agencies dedicated to e-government initiatives	Malawi lacks dedicated e-government agencies, relying on a single government department.
ICT Policy	National policies related to information and communication	Delayed policy passage in Malawi has resulted in slower technology adaptation compared to South Africa

	technology	and Korea.
Internet Accessibility	Availability and affordability of internet services	Malawi has more expensive internet access compared to other countries.
Integrated Government Systems	Integration of various government systems and data	Unlike Malawi, other countries have implemented integrated government systems.
Community Centers	Facilities for public access to ICT services	Many community centers in Malawi are non-operational, whereas those in other countries are functional.

4.3 Lessons learnt from South Africa and Republic of Korea

The lessons learnt from South Africa and Korea is listed below. Overall government role in ICT development is of critical importance towards mobile government implementation.

South Africa

Technological:

- ☐ Promote competition through allowing more service providers to enter into the market
- ☐ Promotion of infrastructure development

Policy:

- ☐ Public Private Partnerships promotion

- Established policies providing framework and practical implementation strategy for transforming public service delivery (DPSA, 1997)

Social / Cultural:

- Establishing multipurpose centres through use of container and converting them to wireless labs for distance learning
- IT graduates training public on use of ICTs

Korea

Social/ Cultural:

- IT and internet literacy programmes for homemakers, farmers and the disadvantaged groups
- Distribution of computers to students of low income families
- Policy
- Public Private Partnership promotion
- Existence of agencies responsible for spearheading e-government projects
- Effective policy development, coordination and review

Technological:

- Promotion of competition through allowing more service providers to enter the telecommunications market.
- Promoting start-up companies
- Promotion of infrastructure development and financing of projects
- Sticking to schedule planned to complete projects and conducting reviews to assess and improve on next strategy
- Security and Privacy Digital Signature Act 1999, NPKI

This case studies outlined in this chapter specifies how mobile government was successfully implemented.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSION

This last chapter summarizes the recommendations to successfully implement mobile government in Malawi by adopting the success factors identified in the analysis of cases studies in chapter 4.

5.1 Recommendations

The increasing demand for mobile services by the public has also led the government to come up with ways of innovating government service delivery. The aim of this study was to come up with critical success factors of mobile government adoption in Malawi through lessons learnt from South Africa and Korea. Below are some of the recommendations suggested for Malawi for both the government and the private sector.

5.1.1 Policy

- ☐ Government should formulate policies, legislation, regulation specifically for E- and M-government implementation
- ☐ There is a need to place a budget specifically for financing e-government projects. The Korea strategy can be followed where 1% of the budget is meant for ICT development. Collaboration among ministries to liaise with the ICT ministry. For instance, the ministry of Trade can finance mobile government projects and ICT ministry can provide discounted services to the trade sector
- ☐ Support of new ventures and small ICT companies to fast track ICT development and mobile government services delivery
- ☐ Enable competition to speed up ICT development and reduction in access cost for final users
- ☐ Government should establish a body responsible for Electronic and Mobile government implementation projects.

5.1.2 Technological Factors

- Promote Public Private Partnerships especially for Industries and Educational Institutions to collaborate on going programs to develop and research on better technology for internet access across the country
- Research on applications to be used in the mobile government especially those that apply to everyday life like citizen's registration, vehicle registration and customs clearance
- Collaborate with leading countries in mobile government development. Caution needs to be taken to develop a strategy that fits to the country situation not replicate leader country strategy
- Developing a secure and private platform that is not susceptible to user data manipulation must be undertaken to ensure citizens use the mobile government system.

5.1.3 Social/ Cultural Factors

- Promote necessary skill building programmes for enabling public to use the e-services provided by government inclusive of disadvantaged groups
- Awareness programmes to push demand for mobile government technology by citizens the South Africa strategy can be followed where the IT graduates are encouraged to teach

When you look at social/ cultural factors, this is a big factor. Culture change is a very broad and dynamic change while social change is only a part of cultural change. Social change is all about improvements made to uplift a certain lifestyle. Cultural change gives new direction to social change. Cultural change includes change in technology like introducing advanced appliances, automobiles, machinery and many more. Indeed, this was a big factor in Korea and South Africa and the same should apply to Malawi.

5.2 Conclusion

Mobile government has been termed as the next generation of government service provision. Though it is still in its infancy stage in most countries, the rapid growth in mobile internet has made it the better option over e-government. This is most in

developing countries where mobile penetration is much higher as compared to fixed internet penetration. Malawi also has a very high mobile penetration which is still growing. Its mobile penetration has grown so high within the years hence Malawi is most suitable for adopting mobile government.

The government initiative for e-readiness through the last mile connection activities and awareness programs shows how the government is committed towards growth of ICT in Malawi.

The Government lead role is essential in promoting mobile government development in Malawi. The high literacy and high mobile penetration is an added advantage towards adopting mobile government. Mobile government implementation will not only create a more efficient and effective government system but will create and promote businesses and create employment opportunities as well. Future research on ground survey with stakeholders should be conducted to find out m-government success factors in relation to Malawi situation. Also challenges and failures that can hinder successful mobile government adoption need to be addressed.

The infrastructures and realities of Malawi in general present various challenges for the integration of Mobile –Government in the way government runs its business to ensure quality service delivery and better dividends of democracy. Mobile phones are largely a pervasive presence in the larger part of the community and it although not free, is stable and nearly ubiquitous. There are numerous advantages for using existing technology and infrastructure for government to ensure quality service delivery. However, little research has been done on the use of mobile technology in social research in a Malawian context which is differ distinctly from the rest of the world as the technology is not primarily used for the mobility that it offers but for the ability to access communities, collaborate and communicate. There are very limited applications on mobile available to support government business in ensuring quality service deliveries. This research study has highlighted some of the potential ways in which m-government systems implementation will help empowerment the citizens in Malawi.

Therefore, m-government implementation will create an opportunity for Malawi to take advantage of mobile phones as a crucial tool for empowerment and development in Malawi. It will enable a standardised and framework-based approach to delivering

government services to citizens, thereby enhancing citizens' participation in the democratic process. This can only be achieved by utilising various functionalities of mobile phones, in ways that make sense in Malawi, while the issues addressed above are taking into proper consideration.

Although this may seem to be a very Malawian approach, I am convinced that the use of the mobile phone as the computing tool of choice in government service delivery will quickly be emulated in other developing countries. This is due to the fact that these devices are becoming more powerful, more ubiquitous and even more multi-functional.

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