

# The Level of e-Government Implementation: Case of Malawi

Frank Makoza

Department of Information Systems, University of Cape Town, South Africa

[Frank.Makoza@uct.ac.za](mailto:Frank.Makoza@uct.ac.za)

**Abstract:** This paper presents an analysis for level of e-government implementation in the context of a developing country. The purpose of the study was to understand the level of e-government implementation in Malawi focusing on examining websites for government ministries and departments. Quantitative and partly qualitative data was used to analyse seven websites for government ministries and departments. The results were compared with indicators for e-government implementation from international development agencies. The findings confirmed that the level of e-government implementation was in the early stages of presence and interaction. Additionally, the results showed slow growth in e-government implementation because of limited integration of public services. The study provides insights that may be useful in improving the implementation of e-government.

**Keywords:** e-government, e-government phases, ICT, Malawi

---

## 1 Introduction

Information and Communication Technologies (ICT) are transforming the way government agencies engage with citizens, businesses and other governments. Governments in developed world are offering value-added services to citizens and businesses using ICT. Similarly, Governments in Sub-Saharan Africa are attempting to use ICT in delivery of some of the public services to citizens, business organisations and other governments (Bwalya, 2009; Dada, 2006; Wyld, 2004). E-government also involves the way government manages information, deliver services to citizens, businesses and communities (Kumar, Mukerji, Butt & Persuad, 2007). In e-government, the focus is to deliver public services and promote citizen participation using ICT (Al-Nuaim, 2011).

The process of implementing e-government involves a sequence of activities and structures called phases (Gottschalk & Solli-Sarther, 2009). Many authors have identified phases in development of e-government differently. For instance, Siau and Long (2006) suggests six phases in implementation of e-government namely presence, interaction, transactions, transformation, seamless and e-democracy. Another model highlights four phases for e-government namely catalogue, transactions, vertical integration and horizontal integration (Layne & Lee, 2001). The six stage model is comprised of web presence, one-way interaction, two way interaction, transaction and integration (Al-Nuaim, 2011). It is possible that the different models for e-government implementation indicate variables which are attempting to demonstrate the strengths and weaknesses of e-government in the environments in which they are implemented. Thus, it is likely that different models may be ideal for understanding the process of e-government in specific contexts.

Interactions between government agents and different sectors of society using ICT promises effectiveness and efficiency of government activities, promoting citizen participation and improved communication between government and business organisations (Allen, Juillet, Pacquet & Roy, 2001; Parajuli, 2007). Governments in developing countries, like their counterparts in developed economies, are also implementing e-government to reap the benefits of using ICT in delivering public services (Kaaya, 2004). There is empirical evidence to suggest that successful implementation of e-government has been problematic in African countries (Dada, 2006; Heeks, 2003). Some of the challenges include the effect of digital divide, inadequate local content, issues of usability, lack of trust in e-government services, lack of government commitment to implement e-government etc. (Bwalya, 2009; Dada, 2006). Little progress has been made in implementing e-government resulting in failure to reap the benefits of using ICT in delivery of government services to the citizenry.

Governments in developing countries are faced with many challenges that are affecting their large part of the population such as lack of food security, pandemic diseases, lack of adequate infrastructure, limited access to clean water and other basic needs resulting in extreme poverty. ICTs are perceived as a means of overcoming some of the challenges (Thompson & Walsham, 2010). Governments are willing to invest in ICTs. Nonetheless, the resources which may be used to invest in improving access to ICT and provide support to overcome social problems should be spent wisely without mistakes (Bollou & Ngwenyama, 2008; Dada, 2006; Yildiz, 2007). It is important that implementation of e-government is effective to maximise gains from the scarce resources. It is

argued that establishing and understanding of the status quo of e-government may help those involved in implementation of e-government to create effective plans and actions (Parajuri, 2007).

Studies for e-government have concentrated in the context of developed countries resulting in paucity of studies for context of developing countries (Heeks, 2003; Kaaya, 2004; Schuppan, 2009). Insights from developing countries context may help to understand how to deal with challenges based on local situations (Thompson & Walsham, 2010). We support the notion that e-government is still a new phenomena in context of developing countries which has been problematic (Dada, 2006; Heeks, 2003; Ngulube, 2007). International development agents compile indicators to establish the level of e-government. For instance, United Nations E-Government Development database provide statistical data on infrastructure development, human capital, online services and level of participation (United Nation E-Government Statistics, 2011). Indicators on e-government development alone may not reflect the realities of e-government development and understanding of the local context (Sharma, 2004; Thompson & Walsham, 2010). Consequently, this paper aims to address the paucity of studies on e-government in context of a developing country.

The study analysed the case of Malawi which has made some substantial progress in ICT diffusion and embraced the concept of e-government in its national ICT development agenda (Bichler, 2008). The study was guided by the research question: *What is the level of e-government implementation of Malawi?* The objectives of the study are twofold. Firstly, to provide evidence based status quo of the level of e-government implementation. Secondly, to address the paucity of literature on e-government studies in context of developing countries.

The rest of the paper is presented as follows. Section 2 reviews literature on e-government and context of the study. Section 3 outlines the theoretical background to the study. Section 4 highlights the methodology employed in the study. Section 5 summarises the results of data analysis. Section 6 discusses the results and conclusions from the study.

## 2 Literature review

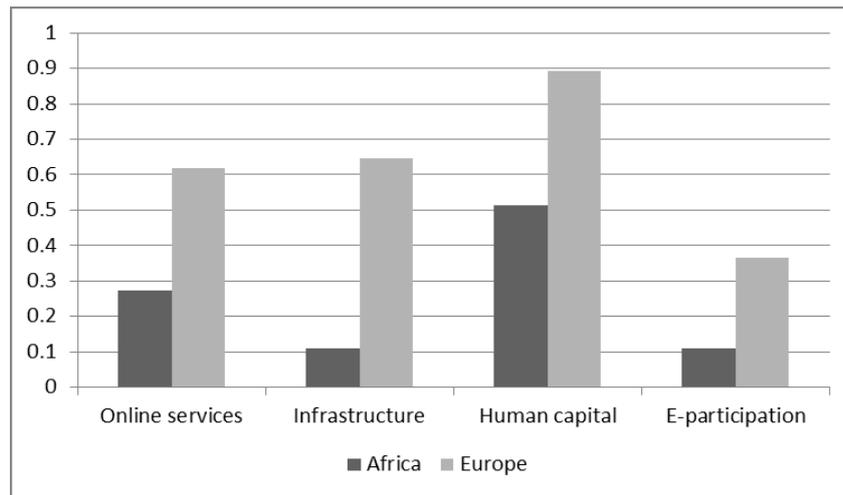
### 2.1 E-Government opportunities and challenges

Introduction of ICT in collaboration and delivery of public services has led to e-government. There are many definitions in literature for e-government (Halchin, 2004). In this study e-government is conceptualised as *“the use of electronic processes by citizens, businesses, and the government to communicate, to disseminate and gather information, to facilitate payments, and to carry out permitting in an online environment”* (Wyld, 2004: 20). From this definition, the role of e-government is to enhance access to information and delivery of services using ICT. The aims of e-government are to improve administrative efficiency in delivery of services, promoting public participation in decisions and actions for government, encourage political accountability and policy effectiveness (Parajuri, 2007; Schuppan, 2009). Provision of services to the citizens using ICT may also support attainment of socio-economic development (Ngulube, 2007).

E-government may be categorised into four based on the users of the services (Yildiz, 2007). The categories are Government to Government (G2G), Government to Citizens (G2C) and Government to Business (G2B) (Siau & Long, 2006; Yildiz, 2007). Further, the categories can also include Government to Civil Society Organisations (G2CS) and Citizens to Citizens (C2C)(Yildiz, 2007). The four categories are summarised as follows:

- **G2G:** Government services aimed at serving other governments using internet technologies.
- **G2C:** Government provision of its services to citizens through the internet.
- **G2B:** Government services to businesses that can be obtained via the internet i.e. Online Business Registration, Online Tax Payments etc.
- **G2CS:** Government providing services to civil society organisations using internet technologies.

There are differences in maturity levels of e-government across the globe. For instance, developed countries have higher e-government maturity level (comprised of online services, infrastructure, human capacity and participation in e-government) than African countries. The differences in maturity levels may affect the way the e-government services are used in the categories for e-government. Figure 1 compares the maturity level of e-government between Europe and Africa.



**Figure 1:** E-Government maturity levels for Africa and Europe (UN E-Government, 2013)

There are potential benefits that can be attributed to e-government. Using internet technologies in public service delivery may improve saving of time and money for parties involved in e-government i.e. government and citizens where government offers public services using ICT and citizen accessing public services using ICT. Similarly, e-government may improve accountability resulting in cost saving (Allen et al., 2001). E-government may also facilitate democratic activities such as online voting, campaigning and fundraising (Silcock, 2001). Mutula (2002) also suggests that e-government may facilitate better access to government information on health, agriculture, job opportunities, credit sources etc. and help to reduce poverty in communities. Using e-government in developing countries, governments may address some of the challenges they encounter in delivery of services to citizens such as shortage of personnel and inadequate facilities (Kumar, Mukerji, Butt & Persaud, 2007). Governments may provide services online thereby increasing accessibility of services, increasing efficiency and reduction in costs to citizen when accessing the services (Kumar et al., 2007).

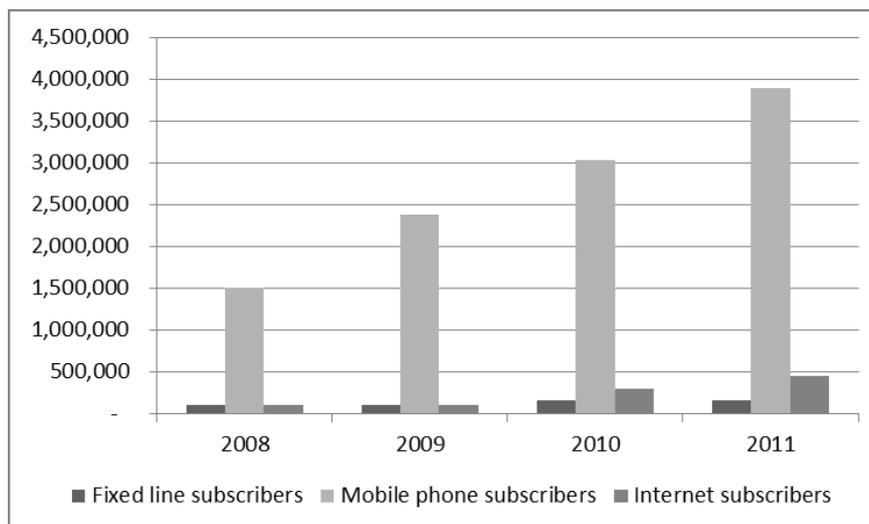
Despite potential benefits that can be obtained from implementing e-government, many developing countries are facing challenges in implementation of e-government (Dada, 2006; Heeks, 2003). The problems include lack of infrastructure, human resources and skills to effectively implement e-government projects and challenges of digital divide where there are unequal access to ICT. Other problems include social economic conditions, lack of appropriate content, language barriers and literacy levels (Netchaeva, 2002). These problems result in inability to implement e-government and citizens are unable to utilize e-government services (Dada, 2006).

## 2.2 Context of Malawi

Malawi, a former British colony, which is located in South East of Africa, has a population of approximate 13.5 million people (NSO, 2010). Malawi is ranked 171 of 187 in the Human Development Index (HDI) report and categorised as one of the low developed countries in the world (UNDP, 2011). The country faces many challenges such as low literacy levels, lack of food security, high rates of unemployment, the impact of HIV/AIDS and environmental degradation (Malawi Growth and Development Strategy Report, 2006). The government of Malawi is committed to reducing poverty and recognised the role of ICT in socio economic development. This is evident in the inclusion of the role ICT in its national development agenda i.e. Malawi Growth and Development Strategy (Malawi Growth and Strategy Development Report, 2006). In addition, the Government of Malawi through Ministry of Information and Civic Education is drafting national ICT Policy which outlines the need for implementation of e-government to improve efficiency and quality of public services delivery (National ICT Policy, 2009). The government has also implemented Government Wide Area Network which connects all ministries and department to improve efficiency in delivery of services and reduce costs (Bichler, 2008b).

In terms of ICT diffusion, Malawi has experienced a significant increase in number of users of ICT. The number of internet users has increased from 8,197 in 2005 to 305,000 in 2010 (ITU Statistics, 2011; NSO, 2010). Similarly, the number of mobile phone users has increased from 1,507,684 subscribers in 2008 to 3,891,260 in 2011 (MACRA, 2013). The results are consistent with many African countries where the mobile phone

subscribers have overtaken the fixed line subscribers. This shows that part of the population have access to ICT and may be able to utilise the government services offered online. Figure 2 illustrates the summary of trend on diffusion of ICT in Malawi from 2008 to 2011.



**Figure 2:** Summary ICT users in Malawi (ITU Statistics, 2011; MACRA, 2013)

To fully understand the context of ICT environment of a country, electronic readiness (e-readiness) assessment may be used as a tool to establish how a country is prepared to formulate and implement plans for adopting ICT for economic, social and development objectives (Ifinedo, 2005). E-readiness may help government to strategise the level of resources for national ICT plans. Assessment of e-readiness examines a number of factors such as infrastructure, literacy levels and support of government policies (Dada, 2006). One way of examining e-readiness is using Network Readiness Index (NRI) which assesses the prospects of a country to take advantage of opportunities afforded by ICT.

The World Economic Forum (WEF) developed the NRI for measuring the influence of ICT on social actors and network readiness of economies across the globe focusing on variables such as environment, readiness, usage and impact. Environment examines political and regulatory systems of an economy in supporting uptake of ICT and the quality of business environment to support entrepreneurship and innovation. Readiness assesses the level of infrastructure and content accessed using ICT, cost of accessing ICT and the level of skills for utilising ICT services. Usage examine efforts to use ICT at different levels of the society i.e. individuals and businesses in their daily activities. At government level, measurement of usage is focused on establishing the effectiveness of implementing ICT policies. Impact assesses the economic and social effects of using ICT in a country. The score for each variable is measured between 1 (lowest) and 7 (highest). The final score is the average of the four composite index scores (World Economic Forum Global ICT Report, 2012). Table 1 summarises the rankings of NRI of Malawi in comparison with its neighbouring countries (Zambia, Tanzania and Mozambique) which may have similar socio-economic structures and conditions.

**Table 1:** NRI ranking of Malawi (World Economic Forum Global ICT Report, 2012)

Country	Ranking	Environment	Readiness	Usage	Impact	Index Score
Zambia	109	4.1	3.28	2.88	2.77	3.36
<b>Malawi</b>	<b>116</b>	<b>3.8</b>	<b>2.86</b>	<b>2.62</b>	<b>2.94</b>	<b>3.05</b>
Mozambique	120	3.34	2.84	2.73	2.95	2.99
Tanzania	123	3.51	3.03	2.67	2.57	2.98

As illustrated in Table 1, Malawi is ranked 116 out of 142 economies for its competitiveness to exploit opportunities provided by ICT (World Economic Forum Global ICT Report, 2012). In comparison with neighbouring countries, Malawi's strengths are in environment (3.8) and impact (2.94) of ICT which may mean that there is a potential for an enabling environment in Malawi to introduce ICT and support diffusion of ICT that may have an influence on the socio-economic development. There is also need to understand why the

readiness and usage are low in comparison to neighbouring countries. The starting point for the analysis may be to understand the overall level of e-government development, hence, the motivation to conduct this study.

To our knowledge, there are few but significant studies that have analysed use of ICT in Malawi (Bwalya, Du Plessis & Rensleigh, 2011; Bichler, 2008; Bichler, 2008b). Bichler (2008) conducted a study on digital divide and internet usage in two major cities of Malawi. The results of the survey showed that the majority of the participants (73.9%) used internet to contact friends and family members. Other uses for internet were for education purposes (27.8%), downloading software (26.5%), and seeking health information (18.8%) among others. On political dimension of sustainability in relation to digital divide, the study concluded that the country was in the early stages of e-government and that poor infrastructure was the main cause of limited implementation of online public services (Bichler, 2008). Nonetheless, the study did not elaborate more on the e-government development.

### **3 Theoretical background to the study**

E-government like any other technological systems undergoes stages for growth. The stages of growth represent development process in terms of change in the use of technology and transformation of organisations activities. The changes are related to capacity of organization to enhance e-government (Andersen & Henriksen, 2006). Stage models have been widely applied in organization and management research (Gottschalk & Solli-Saether, 2009). Stage models may be used to describe predictable patterns of change for an organisation or product. The stages are sequential in nature which cannot be easily reversed and involve activities and structures (Gottschalk & Solli-Saether, 2009).

There are different types of models that highlight stages of growth in e-government implementation. For instance, the five stages United Nations Model (United Nations, 2002) present five phases in the growth of e-government and these are emerging presence, enhanced presence, interactive, transactional and seamless. Layne and Lee (2001) suggest a model for e-government growth stages with perspective of government structures and functions focusing on tackling issues of technology and organisation. The stages of the model are catalogue, transaction, vertical integration and horizontal integration. Another model is the Gartner’s four phases model (Gartner, 2000) which has the following e-government development stages: presence phase, intake process, complete transactions, integration and organisation change.

In attempting to synthesise the different models for e-government implementation, it is noted that there are differences and similarities to the models. The different models were compared focusing on their variables for each phase. It is noted that the variables which are common to the models (See Table 2) were information or catalogue, interaction and transactions (Gartner, 2000; United Nations 2002; Siau & Long, 2005; Chan et al., 2005; Al-Nuaim, 2011). Integration is a common variable as the last phase in all the models. The differences between the models were the number of phases where two of the selected models have four phases (Gartner, 2000; Layne & Lee, 2001) and others six phases (United Nations, 2002; Siau & Long, 2005; Chan et al., 2005; Al-Nuaim, 2011). The differences in number of phases may be attributed to advances in technologies as noted in the timeline for the development of the models. Models that were developed before 2003 have less than five phases while those developed after 2003 have more than four phases. Table 2 summarises models for phases in e-government implementation.

**Table 2:** Summary of models for phases in e-government implementation

<b>Model</b>	<b>Phase I</b>	<b>Phase II</b>	<b>Phase III</b>	<b>Phase IV</b>	<b>Phase V</b>
The 4 Stage Gartner model (Gartner, 2000)	Information Websites with static content	Interaction Email & Downloadable forms	Transaction Integrated websites & transactions	Transformation Seamless integrated sites.	-
The 5-Stage UN Model (2002)	Emerging presence Basic website	Enhanced presence Emerging portal, interactivity, customer service	Interactive Two way interactivity Searchable Intranet	Transactional Enabled transactions	Seamless Fully networked with all government
Layne & Lee (2001)	Catalogue Online	Transactional Services & forms	Vertical integration	Horizontal integration	-

	presence	online	Local systems integration	Integration across functions	
Siau & Long (2005)	Web presence Technology jump	Interaction Technology jump	Transaction Culture reap	Transformation Political reap	E-Democracy Government services
Chan et al. (2005)	Publish Information content	Interact Downloadable forms	Transact Online transactions	Integrate Integration of agencies for services	3P Integrate Integration of public, private and people sectors
Al-Nuaim (2011)	Web presence Static information	One-way interaction Off-line services	Two-way interaction Online services	Transaction Online transactions	Service integration Services integration

As illustrated in Table 2, e-government stage models are more or less similar and one of the areas of focus is on interface between government and users of the public services. Websites provide a means for delivering public services to the citizenry (Parajuli, 2007). An analysis of the e-government stage models was conducted by identifying common elements to the models which were used to come up with a conceptual framework. The framework focused on the level of e-government interface between government and citizens or businesses or other governments (Parajuli, 2007; Popadomichelaki & Mentzas, 2009). One of the aims for implementing e-government is to operate efficient, effective and more transparent public services (Allen et al., 2001; Ngulube, 2007). In this way technology may foster better relationship between government and citizens or businesses or other governments. Ngulube (2007) suggests that stage models “*may appear to be mechanistic in approach, but they provide a useful tool to evaluate the development of e-government in a given context*”. Therefore, the proposed conceptual framework (see Table 3) is based on websites features as a means for providing services to the citizens and website functions to determine the level of e-government.

**Table 3:** Conceptual model for level of e-government

PHASE	Phase I	Phase II	Phase III	Phase IV
VARIABLE	Presence	Interaction	Transaction	Integrated
ELEMENTS	Static pages Catalogue presentation Links to other sites	Services online Downloadable forms Email services	End to end electronic transactions Cross department information sharing Database support	Integrated cross functions One stop shopping for citizens Fully networked (internal/external)

Phase I is presence stage which involves establishing of government online presence where information for government is published online and links to other services are provided. This is usually one way communication where citizens are on the receiving end (Yuldiz, 2007). Phase II is interaction where government provide services online to support offline activities. Citizens may download forms or contact government agencies through e-mail then later visit the agency (Chan et al., 2008). Phase III involves use of transactions where citizens may use online services without visiting the government agency. Transactions may also involve cross government agency sharing of information such as online payments (Al-Nuaim, 2011). Phase IV involves vertical and horizontal integration across government functions. All services are presented together in a seamless and customer focused manner (Chan et al., 2008). For instance, application or registration services may be done through online applications.

#### 4 Research methodology

The study employed quantitative and qualitative methods (Johnson & Onwuegbuzi, 2004). The approach was considered ideal to confirm numerical values of the level of e-government and provide a detailed description of the functions and characteristics of the interface between government and citizens. Indicators alone cannot give a full scope the level of e-government implementation (Sharma, 2004). Quantitative and qualitative data was used to improve the robustness of the results (Patton, 2002).

Purposeful sampling was used in the study where the researcher set a criterion for selecting websites that would support understanding the level of e-government (Cresswell, 2009). The list of government ministries and departments of Malawi was used to come up with the sample for the study. There were 19 government ministries and departments; and 10 of these had internet presence. There were two ministries (Ministry of Local Government and Rural Development and Ministry of Tourism) and one department (Department of Immigration) which their websites were not functional during the data collection period. The sample consisted of 7 websites for Malawi government, ministries and departments summarised in Table 4.

Primary and secondary data for the study were collected in November, 2011. The process of gathering primary quantitative and qualitative data was conducted in consideration of time (concurrent data collection), weight (equal priority for both qualitative and quantitative data) and integration (mixing qualitative and quantitative data in the study) (Cresswell, 2009). Quantitative and qualitative data were collected at the same time. A form containing questions which were developed based on constructs from the conceptual model (Table 3) was used to record the score on presence of the features and functions of the sampled websites. Observations were also used to collect data where the sampled websites were accessed. Detailed descriptions of characteristics and functions of the websites were recorded during the observations. Secondary data sourced from the United Nations Division of Public Economics and Public Administration online database was recorded. The quantitative data contained figures on rankings and scores on e-Government development.

Data analysis was done in two phases. The first phase was analysis of e-Government indicators to understand the context of e-government and trend on growth of e-government in Malawi. The second phase was analysis of primary data obtained through an assessment of e-government websites using the questionnaire and observations based on the conceptual framework. Data from the questionnaires was compiled and analysed using Microsoft Excel. Data for observations was analysed using content analysis. The three sets of data were compared to confirm the level of e-government.

**Table 4:** Summary of the sample used in the study

ID	Ministry/Department	Website (Url)	Category of e-Government	Description of Services
1	Department of Public Procurement	www.odpp.gov.mw	G2B	Provide a list of public tenders to businesses.
2	Malawi Police	www.communitypolicing.mw	G2C, G2B	Offer information and online services
3	Ministry Foreign Affairs	www.foreignaffairs.gov.mw	G2B, G2G	List of information and services for businesses and governments.
4	Malawi Government	www.malawi.gov.mw	G2C, G2B	List information for government and links to other government websites.
5	Malawi Parliament	www.parliament.gov.mw	G2C, G2B	Provide information for citizens and businesses.
6	Ministry Finance and Economic Planning	www.finance.gov.mw	G2C, G2B	Offer information for citizens and businesses.
7	Ministry Trade and Industry	www.trade.gov.mw	G2C, G2B	Provide information for trade and businesses.

## Results

The results of the analysis are presented in two parts. The first sub-section summarise the results of secondary data focusing on e-government development index. The second sub-section outlines the analysis of the results for government websites evaluation and observations on the characteristics and functions of the government websites to establish the level of e-government.

### 4.1 Analysis of trends on indicators

Malawi is ranked number 159 out of the 184 on e-Governments development index (United Nation E-Government Statistics, 2011). The results showed that there was a marginal increase in e-readiness index for e-government from 0.233 in 2003 to 0.2878 in 2008. However, there was a slight decrease between 2008 and 2010 from 0.2878 to 0.2357 (United Nation E-Government Statistics, 2011). The changes may be attributed to effects of changes in environment, usage and readiness. During this period Malawi attempted to develop its national ICT policy which has not yet been implemented (Kanjo, 2008). This may have affected implementation of regulations and laws, initiatives for promoting infrastructure development and access to ICT affecting social and economic impact of the society. Table 5 summarises the trend on e-government development of Malawi from 2003 to 2010.

Table 5: E-Government development trend on Malawi (United Nation E-Government Statistics, 2011)

	2003	2004	2005	2008	2010
Index Score	0.233	0.2697	0.2794	0.2878	0.2357
Rankings	142	135	137	146	159

### 5.2 Analysis of government websites

Almost all the websites that were analysed had content in form of catalogue and links to other government websites. This meant that e-government implementation had moved from presence phase and progressing towards interaction phase. There were variations in terms of percentages for interaction phase. The websites for Office of the Directors of Public Procurement (ODPP), Ministry of Foreign Affairs and Malawi Police had the highest percentage (25%) in this category. The Malawi Government website had 17% on interaction. Similarly, the Malawi Parliament website had the same score on interaction. Table 6 summarises the results for percentages for the assessed websites in each of the four levels.

Table 6: Summary of assessed websites

Ministry / Department	Presence	Interaction	Transaction	Integration	Total
Office of Director of Public Procurement	25%	25%	14%	0%	64%
Malawi Police	25%	25%	0%	0%	50%
Ministry Foreign Affairs	25%	25%	0%	0%	50%
Malawi Government	25%	17%	0%	0%	42%
Malawi Parliament	25%	17%	0%	0%	42%
Ministry Finance and Economic Planning	25%	8%	0%	0%	33%
Ministry Trade and Industry	25%	0%	0%	0%	25%

The Government ministries and departments that were analysed were using websites to support their off-line activities such as filling of online forms for bidding tenders advertised by the ODPP; requesting for Very Important Persons (VIP) services for official intending to visit Malawi using the VIP Booking system for Ministry of Foreign Affairs; and Anonymous tip off where the general public may report criminal activities anonymously online for Malawi Police. The categories of services were mainly for G2C and G2B. Majority of the ministries and departments published content that was useful to citizens and business organisations. The context included details of the functions of the ministries, the services offered to the public and business organisations.

The results showed that apart from the ODPP websites, the other websites for government ministries and departments had no functions for delivering transactions and were not integrated with other ministries and departments. The ODPP website had the procurement reporting system with database support but there was

no evidence to suggest that information about transactions was shared with other departments or institutions. Further, the results indicated that all the websites were not integrated in vertical and horizontal dimensions. Table 7 summarises observations on the phases of e-government implementation in the sampled websites for the study.

**Table 7:** Summary of observations on e-government phases

<b>Ministry/Department</b>	<b>Presence</b>	<b>Interaction</b>	<b>Transaction</b>	<b>Integrated</b>
Malawi Government	Dynamic content website with catalogue and links.	No online services but downloadable documents and Email services.	No support for transactions and backend services.	Services not integrated with other agencies.
Ministry of Foreign Affairs	Catalogue and links are present with dynamic content for website.	Online services for VIP Booking, online forms available and Email services.	No cross agency information sharing.	No service integration.
Ministry of Finance and Economic Planning	Dynamic website with catalogue and links to other websites.	No online services but has downloadable documents and Email system.	Transactions support and cross agency information sharing not present.	Integration of services with other government departments not present.
Ministry of Trade and Industry	Static content with catalogue and links for other websites.	Downloadable documents present but no online services. Email system present.	No evidence for support for transaction and cross agency information sharing.	Services are not integrated with other government agencies.
Parliament of Malawi	Content, catalogue and links present.	Downloadable forms present but no online services. Email system present with search facilities.	No support for transactions and information sharing with other government agencies.	Services are not integrated with other government agencies.
Malawi Police	Dynamic content and catalogue present with links to other agencies.	Downloadable reports and anonymous tip off forms and unfunctional online forum with email services.	No evidence on support for transactions and information sharing with other agencies.	Services not integrated with other organisations
Department of Procurement	Dynamic content website with links to other agencies.	Downloadable documents and online forms. Supported by Email services.	Partial support for transactions through Procurement Reporting System with Database support. No evidence of information sharing.	Integrated services with other agencies not yet implemented.

#### **4.2 Summary of level of e-government**

Using the conceptual framework, the analysis included assessment of the level of e-government to address the objective of the study. It emerged that majority of the websites that were analysed had all the features for the presence phase namely content, catalogue and links to other websites. Similarly, apart from the website for

Ministry of Trade and Industry the rest of the websites (85.7%) had the features for supporting interaction such as online service, downloadable forms and email services. There were no websites with features for transaction and integration phases. Table 8 summarises the level of e-government implementation.

**Table 8:** Level of e-government implementation

Phase of e-Government	Number of Ministries / Departments	Percentage of Sample of 7 Ministries/Departments	Percentage of all 19 Ministries
Presence	7	100%	36.8%
Interaction	6	85.7%	31.5%
Transactions	0	0%	0%
Integration	0	0%	0%

The results clearly showed that the level of e-government implementation in Malawi is between presence and interaction. Most of the Government ministries and department have not utilised the internet as an alternative means for supporting delivery of public services.

## 5 Discussion of results and conclusion

E-government promises many benefits to developing countries to support delivery of public services through the internet (Kaaya, 2004; Parajuli, 2007). E-government implementation involves phases which may be used to determine growth (Gottschalk & Solli-Saether, 2009). Returning to the objective of the study to assess the level of e-government, the results showed that Malawi is in the early stages of e-government (presence and interaction phases). Majority of the government ministries and departments have not yet implemented e-government websites. The e-government websites were in the presence and interaction phases and there were no websites for transaction and integration phase. The results were consistent with indicators which ranked Malawi on 119 of 134 economies for its competitiveness exploit opportunities provided by ICT (World Economic Forum Global ICT Report, 2012).

It was also noted that the number of internet users in Malawi is increasing (ITU Statistics, 2011; NSO, 2010; MACRA, 2013). The increase in number of internet users is an opportunity for the government to provide online services and improve the delivery of its services to the citizens and businesses. The government may also utilise the infrastructure such as the Government Wide Area Network to support e-government (Bichler, 2008). However, the results showed that there is slow rate in the growth in e-government. From the supply side of e-government, the slow growth may be attributed to some of the challenges highlighted in similar studies such as limited IT capabilities to implement e-government, data privacy and security concerns, lack of motivation and local ownership, lack of resources to maintain the systems etc. (Bwalya, 2009; Dada, 2006; Heeks, 2003; Schuppan, 2009). The study suggests the following recommendations for those involved in the implementation of e-governments:

Improving the existing e-government services to increase growth of e-government through reviews of online public services with stakeholders i.e. Government administrators, the private sector organisations and citizens. Problems that are inhibiting e-government development will be identified and appropriate action will be taken.

Enhancing collaboration in e-government initiatives to support the ministries and departments that have not implemented e-government for easy integration of services and information sharing. This will support growth of e-government in transaction and integration phases.

The study recognises the limitation of differences in public services readiness and national infrastructure within developing countries. Developing countries in this study are those countries with low score in the e-government maturity level. The low scores may be in availability of online services, ICT infrastructure, human capacity and participation in e-government initiatives (UN E-Government, 2013). These attributes may affect implementation of e-government and may be analysed to establish the opportunities available in specific countries.

There are many e-government evaluation frameworks in literature which can be used to assess the level of e-government development. The frameworks concentrate on different aspects of e-government such as

usability, accessibility, functionality etc. The current study main aim was to analyse the level of e-government in the development stages focusing on websites as an interface where the citizens and businesses access public services online. Further research may arise from the current study to assess the other dimensions of e-government implementation such as the processes in e-government, trust and quality services (Yildiz, 2007).

## References

- Allen, B. A., Juillet, L., Pacquet, G., & Roy, J. (2001). E-governance and government on-line in Canada: partnerships, people and prospects. *Government Information Quarterly*, 18(2), 93-104.
- Al-Nuaim, H. (2011). An Evaluation Framework for Saudi E-Government. *Journal of e-Government Studies and Best Practices*, 2011(2011), 1-12.
- Andersen, K., & Henriksen, H. (2006). E-Government maturity model: Extension of Layne and Lee Model. *Government Information Quarterly*, 23, 236-248.
- Bichler, R. (2008). Southern Africa and Digital Divide: A Malawian Case study. *The International Journal of Technology, Knowledge and Society*, 4(6), 41-50.
- Bichler, R. (2008b). Information and Communication Technologies in the Republic of Malawi: an Assessment of Progress and Challenges Ahead. In: Bada, Abiodun O./Musa, Philip (Eds.): *Proceedings of the IFIP WG 9.4-University of Pretoria Joint Workshop. Towards an ICT research Agenda for African Development. International Federation for Information Processing, Pretoria, South Africa*. pp. 189-202.
- Bollou, F., & Ngwenyama, O. (2008). Are ICT investments paying off in Africa? An analysis of Total Factor productivity in six West African Countries from 1995 to 2002. *Information Technology for Development*, 14(4), 294-307.
- Bwalya, K. (2009). Factors affecting adoption of e-Government in Zambia. *Electronic Journal of Information Systems in Developing Countries*, 38(4), 1-13.
- Bwalya, K., Du Plessis, T. & Rensleigh, C. (2011). Multi-Dimensional factors impacting on e-government adoption in Botswana, Mozambique and Malawi. *International Journal of E-Adoption*, 3(3), 20-32.
- Chan, C., Lau, Y., & Pan, S. (2008). E-government implementation: A macro analysis of Singapore's e-government initiatives. *Government Information Quarterly*, 25, 239-255.
- Cresswell, J. (2009). *Research Design: Qualitative, Quantitative and Mixed Approaches*. London: Sage.
- Dada, D. (2006). The failure of e-Government in developing countries: A literature review. *Electronic Journal of Information Systems in Developing Countries*, 26(7), 7-10.
- Gartner (2000). *The 4-Stage Gartner Model*. Accessed on 10 November, 2011 from: <http://www.windley.com/docs/eGovernmentMaturity.pdf>
- Gottschalk, P., & Solli-Saether, H. (2009). Stages of E-Government Interoperability. In Gottschalk, P., & Solli-Saether, H. (Eds.), *E-Government Interoperability and Information Resource integration: Frameworks for Aligned Development*, pp.108-123.
- Halchin, L. (2004). Electronic government: Government capability and terrorist resource. *Government Information Quarterly*, 21, 406-419.
- Heeks, R. (2003). *Most e-Government for Development fail: How can risks be reduced?* iGovernment Working Paper Series, Paper No. 14. Accessed on 10 November, 2011 from: [http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/documents/igov\\_wp14.pdf](http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/documents/igov_wp14.pdf)
- Ifinedo, P. (2005). Measuring Africa 's e-readiness in the global networked economy: A nine-country data analysis. *International Journal of Education and Development using ICT*, 1(1), 53-71.
- ITU Statistics (2011). *International Telecommunications Union Statistics Database*. Accessed on 10 November, 2011 from: <http://www.itu.int/ITU-D/ict/statistics/index.html>
- Johnson, B., & Onwuegbuzie, A. (2004). Mixed methods Research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Kaaya, J. (2004). Implementing e-Government Services in East Africa: Assessing status through Content Analysis of Government Websites. *Electronic Journal of e-Government*, 2(1), 39-54.
- Kanjo, C. (2008). Going beyond Diagnostics and Planning in ICT initiatives: Limitations in the context of Malawi. *Proceedings on the 5th Plato Community Informatics and Development Informatics Conference on ICTs for Social Inclusion: What is the reality? Plato, Italy*.
- Kumar, V., Mukerji B., Butt I., & Persaud, A. (2007). Factors for Successful e-Government Adoption: a Conceptual Framework. *The Electronic Journal of e-Government*, 5(1), 63 – 76.
- Layne, K., & Lee, J. (2001). Developing fully functional E-Government: a four-stage model, *Government Information Quarterly*, 18(2), 122-136.
- MACRA (2013). Telecenters status in Malawi. *Malawi Communications Regulatory Authority, Connect a constituency Workshop, Lilongwe, Malawi*, 25-26 February, 2013. pp. 1-18.
- Malawi Growth and Development Strategy Report (2006). *Malawi Growth and Development Strategy Report: From poverty to prosperity 2006-2011*. Ministry of Finance, Malawi.
- Mutula, S.M. (2002). Africa's web content: Current status. *Malaysian Journal of Library & Information Science*, 7(2), 35-55.
- National ICT Policy (2009). *Malawi National Policy final draft*. Ministry of Information and Civic Education, Malawi.
- Netchaeva, I. (2002). E-Government and e-democracy: A comparison in the North and South. *Gazette: The International Journal for Communication Studies*, 64(5), 467-477.

- Ngulube, P. (2007). The nature and accessibility of e-Government in Sub Saharan Africa. *International Review of Information Ethics*, 7(9), 1-10.
- NSO (2010). Statistical Year book 2010. Accessed on 10 November, 2011 from: [http://www.nso.malawi.net/images/stories/data\\_on\\_line/general/yearbook/Statistical%20Yearbook%202010.pdf](http://www.nso.malawi.net/images/stories/data_on_line/general/yearbook/Statistical%20Yearbook%202010.pdf)
- Parajuli, J. (2007). A Content Analysis of Selected Government Web Sites: a Case Study of Nepal. *The Electronic Journal of e-Government*, 5 (1), 87 – 94.
- Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. Sage Publications: London.
- Popadomichelake, X., & Mentzas, G. (2009). A multiple-Item Scale for assessing E-government Service Quality. In (eds) Wimmer et al., *EGOV 2009, LNCS 5693*, 163-175.
- Schuppan, T. (2009). E-Government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly*, 26, 118-127.
- Sharma, C. (2004). *ICT for development: case studies from India*. Neu Delhi: National Institute for Smart Government.
- Siau, K., & Long, Y. (2005). Using social development lenses to understand e-government development. *Journal of Global Information Management*, 14(1), 47-62.
- Silcock, R. (2001). What is e-Government?. *Parliamentary Affairs*, 54, 88-101.
- Thompson, M., & Walsham, G. (2010). ICT Research in Africa: Need for a strategic developmental focus. *Information Technology for Development*, 16(2), 112-127.
- UNDP (2011). *The Human Development Index Report*. United Nations Development Programme. Accessed on 23 November, 2011 from: [http://hdr.undp.org/en/media/HDR\\_2011\\_EN\\_Complete.pdf](http://hdr.undp.org/en/media/HDR_2011_EN_Complete.pdf)
- United Nation E-Government Statistics (2011). UN E-Government Development Database. Accessed on 10 November, 2011 from: <http://www2.unpan.org/egovkb/datacenter/CountryView.aspx>
- United Nation E-Government Statistics (2013). UN E-Government Development Database. Accessed on 5 June, 2013 from: <http://unpan3.un.org/egovkb/datacenter/regionalview.aspx?view=table&reg=1&ID=1>
- United Nations (2002). *Benchmarking E-Government: A Global Perspective*. Accessed on 10 November, 2011 from: <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021547.pdf>.
- World Economic Forum Global ICT Report (2012). *Living in a Hyperconnected World*. World Economic Forum. Accessed on 10 May, 2012 from: [http://www3.weforum.org/docs/Global\\_IT\\_Report\\_2012.pdf](http://www3.weforum.org/docs/Global_IT_Report_2012.pdf)
- Wyld, D.C. (2004). The 3 Ps: The essential elements of a definition of e-Government. *Journal of E-Government*, 1(1), 17-22.
- Yildiz, M. (2007). E-government research: Reviewing the literature, limitations and ways forward. *Government Information Quarterly*, 24, 646-665.