e-Government readiness in Ghana: a SWOT and PEST analyses

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Abstract: E-Government has transformed how governments provide efficient and effective services to citizens, businesses and other government agencies in both developed and developing nations. For developing nations, a context-oriented approach should be considered for a successful implementation of e-government. The paper examines the e-government readiness of Ghana, a developing nation in Africa. We employ a SWOT (Strengths, Weaknesses, Opportunities and Threats) and PEST (Political, Economic, Social and Technological) analysis of Ghana's readiness to successfully implement e-government. We provide implications for practice and research. The analysis framework used in this study can be applied for other South-Saharan Nations.

Keywords: e-government; emerging economy; SWOT analysis; PEST analysis; developing countries; Ghana; Africa.

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1 Introduction

The availability and use of Information and Communication Technologies (ICT) can enhance efficient delivery of basic amenities and facilitate the social, economic, cultural and political growth of developing countries (Deliktas and Kok, 2003; Färe et al., 1994; Jalavaa and Pohjolab, 2002). Some international organisations, including the World Bank, the United Nations and the International Telecommunication Union have suggested that investments in ICT are essential for human development in the information age (UNDP, 2003, 2005; WorldBank, 2011). Others have suggested that the proper level of investment in ICT, health and education can enhance development in West African nations (Ngwenyama et al., 2006).

Research has indicated that electronic government (e-government) has emerged as an effective means for governments to improve processes, deliver effective and efficient services to citizens, businesses and other government agencies (Lee et al., 2005) and reduce the perception of corruption (Garcia-Murillo, 2010). Hence, the question is not whether to invest in ICT, as some critics have argued, but to what extent should governments invest in ICT – particularly for e-government initiatives. Investing in e-government will, in the long run, help developing nations such as Ghana increase efficiencies and encourage effective business with all its stakeholders (Layne and Lee, 2001). Other researchers provide examples where the implementation of public information systems in developing countries has encountered several

challenges, resulting in failure (Avegrou, 1998; Dada, 2006). Schuppan (2009) suggests that a context-oriented approach is needed for successful implementation of e-government in Sub-Saharan Africa. Hence, it is important that researchers examine the factors that would influence successful implementation of e-government in specific nations in Sub-Saharan Africa; paying particular attention to the context in which the implementation occurs.

In this paper, we examine the plausibility by which Ghana may implement effective and efficient e-government systems by reviewing the vision, objectives and strategic framework for e-government in Ghana using a SWOT and PEST analyses framework (Ha and Coghill, 2006). This paper also investigates the existing state of e-government in Ghana and the preparedness for future development. In undertaking the analysis, we seek to contribute to information systems research in Africa (Mbarika et al., 2005), particularly in the e-government domain, where a context-oriented approach is critical (Schuppan, 2009).

The rest of the paper is organised as follows. In Section 2, we present the background of the research. We provide an overview of Ghana with a focus on how democracy has improved, allowing the nation to open up to the challenges and opportunities of globalisation and economic maturation. We also discuss e-government, highlighting the different models of e-government that are being considered or pursued in Ghana. In Section 3, we present our SWOT analysis and PEST determinants research framework (Ha and Coghill, 2006), which we have used to evaluate the readiness of Ghana towards successful implementation of e-government. We present a discussion and analyses of the SWOT and PEST framework in Section 4. Finally, we conclude the paper with a discussion of implications of this work and potential future research in Section 5.

2 Background

2.1 Democracy in Ghana

In 1957, Ghana became the first nation in Africa to gain independence from colonial rule. As a nation, Ghana's democratic progress has been undermined by a succession of coup d'états which have destabilised and weakened the country's social and economic growth. Subsequent to a tentative start, Ghana returned to democratic rule in 1992 (Abdulai and Crawford, 2010). The democratic dispensation after this period has been the longest since Ghana gained independence. In January 2000, Ghana witnessed, for the first time, an elected government successively handing over power to another elected government. Since then, Ghana's democratic process has been praised by international governments and institutions and has been heralded as an icon for other African nations south of the Sahara (Langdon, 2011). In January 2009, the opposition party that lost to the incumbent government in 2000 won in the elections and once again, power was smoothly transferred, enhancing the image of the nation, especially among neighbouring countries. With the rapid growth in democracy and rule of law, the new government has promised to use the nation's resources to develop infrastructure, education and health and to prevent crime and reduce poverty. With recent discoveries of oil reserves, Ghana is poised to capitalise on the security of its democratic processes with new sources of income (Caskie, 2008). However, with a long history of poverty in rural areas, it remains to be seen whether Ghana can deliver the ICT infrastructure required to allow e-government to penetrate into these rural areas (Aryeetey and McKay, 2007; Gough and Yankson, 1997).

Ghana, like a dozen or so other African countries, further enhanced its transition to democracy in the early 1990s by introducing multiparty elections. As such, Ghana has had four democratic experiments since her independence in 1957, the current one starting on January 7, 1993 (Langdon, 2011). All the four democratic experiments have revolved around two relatively stable political parties. Ghana has always had a two-party national system during its often-interrupted democratic history (Austin, 1970; Chazan, 1983). While there has always been a stable two-party system at the national level, there are wider variations of this system in the regions that comprise Ghana. These regional variations developed as a product of opposing ethno-political forces of group fragmentation and concentration (Mozaffar et al., 2003). However, instead of these variations acting against the national two-party arrangement, they actually sustain and reinforce the national system; although some recognise the need for reforms to the decentralising tendencies of the current system in Ghana (Crawford, 2009). The roots of this two-party system, with the various regional variations, greatly influenced the movement for the Gold Coast (former name of Ghana) decolonisation in the late 1940s. These early systems have largely remained intact throughout Ghana's post-colonial history and they maintain a reasonably consistent ideological sway throughout the country.

The political landscape of the current 'fourth republic' in Ghana consists of the two traditional political ideologies, with some smaller parties of very insignificant membership rounding out the picture. The two dominant parties are the liberal New Patriotic Party (NPP) and the populist National Democratic Congress (NDC). The NDC and NPP have dominated in the recent; fourth republic; elections, alternating in office (Fobih, 2010). Competition in Ghana politics is high, especially given the willingness of voters to shift support between the various political parties from one election to the next. The parties share support from a margin of flexible voters who shift allegiance based on factors such as social, economic, political, moral, personal, policy and environmental. It is against this political history and backdrop that we explore the possibilities and potential for e-government initiatives in Ghana.

2.2 Electronic government in Ghana

In the information age, a major driving force for human development is the providence of investment in ICT (Ngwenyama et al., 2006). As such, many governments all over the world have sought to employ e-government to some degree. Just as information technology is employed by organisations to improve operations, governments can improve the efficiency and effectiveness of their governance using information technology (Basu, 2004; Evans and Yen, 2006; Hossan and Bartram, 2010; Raghupathi and Wu, 2011; Sagheb-Tehrani, 2010; Schuppan, 2009; Spirakis et al., 2010). According to Ha and Coghill (2006), e-government development involves three main relations: Government to Citizen (G2C), Government to Business (G2B) and Government to Employee (G2E).

Among the important benefits of e-government in developing nations is the degree of 'daylight' and transparency that e-government can be bring to emerging democratic processes. Corruption and inefficiencies in governmental institutions impede social development in developing nations (Hossan and Bartram, 2010). It has been the case that government departments and procedures in less developed nations are commonly deemed as corrupt and inefficient because they have little motivation to meet citizen expectations and citizens do not have an alternative provider for government services. This has become especially relevant given the increasing unrest in the Middle East, in areas such as Egypt, Libya, Syria and other oil rich countries such as Nigeria in recent times, especially in 2011. Citizens

of the aforementioned countries are demanding efficiency, transparency and participation in governance and a share in revenue from resources. In Ghana, social movements such as the '*Kume Preko*', which brought together concerned citizens from different political, religious and ethnic groups, have been touted as critical tools that citizens of Ghana have used to challenge governments' corruption and inefficiency. In such movements, citizens call upon their government to live up to their expectations and, thereby, enabled the country to enjoy the stability of their hard won democracy that Ghanaians currently pride themselves in (Langdon, 2011). The civil unrest in the Middle East and successful demonstrations by citizens of Ghana have been recognised as transformative, as they challenged well-entrenched state power (Langdon, 2011). Technology has helped citizens to be more focused and organised in their demands from their governments. A typical example is the use of *Facebook*, a social media website, to organise an effective protest by citizens of Egypt in the early part of 2011. This led to the toppling of the Mubarak Administration, which had been in power for almost three decades (Magen, 2012). What the transformative events in the Middle East in 2011 have demonstrated is that technology and communication hold power to promote real change in attitudes and actions towards citizens on the part of governments. This appears to have fostered a new perspective within the ranks of government, which views citizens as constituents whose satisfaction is important.

There is culpability to the individual citizen made possible with e-government that both reduces disenfranchisement and also promotes interaction with and accountability to the individual citizen. This change in attitude is actually more efficient for governments, as well as for the citizen, as it allows governments to deal with the citizens with uniform and consistent information and also allows governments to process information more efficiently and collect data while doing so. An important by-product of this efficient transaction is customer/citizen satisfaction.

For developing nations, it is hopeful that they can replicate the successes of e-government in developed areas of the world. Countries like the USA, Norway, Denmark and the UK have used their technological and educational abilities to create many successful e-government implementations and structures (Carter and Bélanger, 2005; Damodaran et al., 2005). In view of the present difficulties facing many African countries, e-government offers improvement potential in the following areas: the general provision of public services, statistical and information processes, finance management and tax systems, public participation, transparency and formalisation. In the area of public service provision in the African context, it is first a matter of providing and setting up the processes and services necessary for state activities under the rule of law (Shirazi et al., 2010). However, it is short-sighted to think that Ghana can simply replicate successful e-government in the same manner and fashion as those in developed countries. This is so as the political, historical, cultural and ethnic context of Ghana is distinct.

Developing countries like Ghana are still in a relatively nascent stage of creating their technology, communication and education base, which may help the country to move towards an e-government system that can transform traditional public administration. However, if successful, ICT investment in e-government may ensure the ability of the government and citizens to effectively communicate and share information with each other via electronic media; the citizens will greatly benefit from these government communications. Other benefits include the ability to serve citizens through effective e-government structures including an improvement of education information, prison security and e-voting. Successful e-government initiatives promise to engage citizens and

businesses in a more efficient and effective way by leveraging the internet and the world wide web (Shirazi et al., 2010).

e-Government offers the ability to obtain government services through electronic means: enabling electronic access to government information and facilitating the completion of government transactions without restrictions of time and place, which enables equal access, increases transparency and reduces corruption (Hossan and Bartram, 2010). The emergence of e-government offers a potential to reshape the public sector and strengthen relationships between citizens, businesses and the government. e-Government can also improve the quality of the services to citizens by leveraging technology to provide access where access was previously difficult to obtain. Factors that hinder e-government implementations include lack of good communication infrastructure, low computer literacy, limited access to the internet, computer and information security, privacy and lack of financial resources (Norris and Moon, 2005; Sagheb-Tehrani, 2010). e-Government has, in the past, transformed the way governments function through the implementation of various e-government models such as (G2C), (G2B), Government to Government (G2G) and government Internal Efficiency and Effectiveness (IEE) (Lee et al., 2005).

e-Government is one of the focus areas of ICT for development (ICT4AD) – policy to transform Ghana into an information-rich knowledge-based society and economy via the development and deployment of ICTs within the economy and society (Boateng, 2009). Ghana's e-government strategy has six main goals:

1 establish institutional framework to oversee the implementation of e-government

2 establish a component-based Ghana government enterprise architecture to facilitate efficient and effective citizens to government, government to government and G2B interactions

3 implement a secure, robust and interoperable e-government infrastructure

4 ensure the legal and regulatory framework that supports the adoption and implementation of e-government

5 leverage the use of ICT, within an effective e-government environment to meet vital socio-economic development goals (e-services)

6 seek active and direct participation of the private sector in the implementation of e-government (Boateng, 2009).

Attempts at e-government implementation in Ghana have been more focused on (G2C) and (G2B) models. The government of Ghana has organised available capital and human resources to improve on delivery and quality of service to citizens and business.

2.2.1 Government to Citizen (G2C)

This is the first target group of e-government and refers to public services provided by the government of Ghana to citizens through electronic means and thus improves service quality (Clift, 2004).

Since 2005, the government has been using a computerised School Selection Placement System (SSSPS) to automatically place public school students from junior secondary schools to senior secondary schools, based primarily on scholarship. Although the system may not be perfect, government and major stakeholders believe that it provides benefits such

as removing regional restrictions on candidates, promoting fairness, equity and access to candidate's choice, reduction in human errors and manipulation and efficiency, transparency and speed. Students can access their records throughout the whole country using mobile systems, thereby eliminating the need to travel to the school to verify whether they gained admission (Boateng, 2009).

The website of the country's National Information Technology Agency (NITA) boasts of the development of a network infrastructure to enable various e-government services such as e-parliament, e-passport, e-immigration and e-justice. (nita.gov.gh). On October 19, 2011, the Minister of Communication reported in the Ghanaian Daily Graphic that Ghana was making progress in e-government. The minister noted that the e-government infrastructure project is geared toward providing efficient network for ministries and metropolitan and district assemblies. This project is under the auspices of NITA and has been set up under a cooperation agreement with China. He mentioned that some of the important goals were to increase efficiency and speed (biztechafrica.com).

e-Registration has been implemented by the Ghana Immigration Service, the National Health Insurance Scheme and to a lesser extent, the National Identification Scheme. The Ghana Immigration Service has, since 2010, implemented the electronic passport where citizens who apply pay the transaction cost, submit their application forms and are issued with an electronic passport. To ensure that citizens feel safe and secure from identity fraud (West, 2006), regional centres have been opened all over the country, where applicants need to submit their application forms in person for their photographs to be electronically taken for the passport. The purpose of this system is to reduce the incidence of fraud in passport acquisition and other immigration crimes. Further, the system has become more transparent and accessible to all citizens. This can reduce corruption perception by citizens. Under the National Health Insurance Scheme, citizens are electronically registered and their records, especially health records, stored in a database which can be used to monitor doctor and hospital visits, drugs and surgeries for insurance payout for medical services. To reduce identity fraud and insurance fraud, registration is brought to the door step of citizens where designated people come to the homes of citizens to do the registration.

Implementation of e-voting was expected to start in December 2012 for the presidential and parliamentary elections. However, the Chairman of the Electoral Commission recently announced that the country cannot use e-voting in the coming elections, citing lack of access to computer for voters and high computer illiteracy among voters as the main reason. It is anticipated that as voters are trained on e-voting, the country would be ready to use e-voting. The chairman, however, reported that biometric systems would be used for voter registration to minimise intimidation, double voting and other irregularities (modernghana.com). The successful implementation of e-voting will greatly enhance the validity and fairness of election results in Ghana.

2.2.2 Government to Business (G2B)

The G2B model is the second target of e-government in Ghana and refers to government interaction with business electronically. In Ghana, this interaction is mainly in the form of e-payment. e-Payment is offered by the Customs, Exercise and Preventive Service for import duties on what is known as the GC-Net (Ghana Community Network), which facilitates the electronic processing of import duties on imported products (Griffin et al.,

2004). This service is supposed to make the payment of import duties convenient and reduce fraud. To eliminate bureaucracy and inefficiencies at Ghana's ports and harbours, GC-Net, which was first introduced at the Kotokota International Airport in October 2002, was implemented at the ports and harbours in July 2006 (Schuppan, 2009). This system helps fight corruption and improves efficiencies, thereby improving logistics and supply chains of both local and international companies in Ghana. Prior to the implementation of GC-Net, one noted bureaucratic practice was that a shipment required 13 copies of shipment papers. This requirement not only contributed to delays, but also encouraged corruption (Schuppan, 2009). Other benefits of the GC-Net system are:

- accurate real-time revenue accounting and reconciliation among stakeholders
- systematic monitoring and tracking of consignments from port to destination
- ability for regulatory agencies to access a common database required for regulatory functions
- improved trade facilitation and quick clearance at the ports (Boateng, 2009).

Research organised in Bangladesh indicates that both government officials and private sector managers show positive attitude towards e-government (Hossan and Bartram, 2010). We expect that with the growth in democracy in the country, such enthusiasm towards the use of e-government would be observed in leaders in both the private and public sectors in Ghana as well.

3 Research framework

This paper uses secondary data from literature and government material to portray the context in which the SWOT and PEST analyses are used to conduct the study. To have long term sustainability, an e-government system implementation and growth must concentrate its future objectives on its strengths, while averting its weaknesses. In addition to respond to internal strengths and weaknesses, an organisation or institution needs to be familiar with the opportunities and threats resulting from the external environment. Such recognition of the strengths and weaknesses, along with the evaluation of the opportunities and threats, takes place on the basis of a SWOT analysis. The SWOT analysis is a strategic planning tool used to evaluate the Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T) involved in a project such as e-government implementation.

Popularised from the 1960s onward, the SWOT analysis has become a common means of developing strategies concerning the fit between the external situation a firm faces (threats and opportunities) and its own internal qualities or characteristics (strengths and weaknesses) (Hill and Westbrook, 1997). At a basic level, a SWOT analysis allows for an enumeration of factors which influence a strategy internally and externally such that each can be visually and thematically juxtaposed. Additionally, SWOT is a simple and practical tool which can then lead to more critical and detailed thinking on a subject. In this sense, SWOT is not an analytical tool from which deep and meaningful statistical inferences can be derived; it is a tool that is useful when ideas and thinking on a subject are nascent (Pickton and Wright, 1998). While SWOT is not without limitations – loosely-defined factors, lack of ranking rules, subjectivity biases, etc. – the technique is useful as an inroad to analysis and a means of developing

an initial catalogue of concerns. In this sense and for the purposes of this paper, SWOT is used as a tool to manage the processes of investigating the possibilities for e-government implementation in Ghana.

Not only is the SWOT analysis considered, but also PEST (Law, 2006) factors are examined to assess the current and prospective state of e-government in Ghana (Ha and Coghill, 2006). Each factor of the SWOT analysis is additionally studied according to PEST factors, which refers to Political (P), Economical (E), Social (S) and Technological (T) variables.

The conceptual structure of the SWOT framework is shown in Table 1 (Quansah et al., 2010). Ghazinoory and Ghazinoori (2006) used SWOT to propose a method for formulating government strategies for improving national innovation systems in developing countries. SWOT analyses have also been used in decision making techniques (Kapliński, 2008) and in ICT implementations (Quansah et al., 2010). Ha and Coghill (2006), on the other hand, used both a SWOT and a PEST analyses. In this paper, we use a similar approach to examine the e-government readiness of Ghana, a developing country. Using both approaches in a single paper allows the researcher to develop a more comprehensive understanding of the issues that are being studied (Ha and Coghill, 2006).

Table 1 SWOT analysis framework

	Internal factors	*External factors*
Favorable factors	*Strengths* a resource that can be effectively used to achieve its objectives	*Opporunities* any favorable situation in the external environment
Unfavorable factors	*Weaknesses* a limitation, fault or defect that makes achieving objectives difficult	*Threats* any unfavorable situation in the external environment that is potentially damaging to its strategy

Source: Adapted from Quansah et al. (2010)

4 Analysis and results

We present detailed discussion of the components of the SWOT analysis and PEST determinants on e-government readiness in Ghana.

4.1 SWOT and PEST analyses

Whilst SWOT allows an organisation such as a government organisation to look at internal strength and weakness as well as its external treats and opportunities, PEST looks at the political, social, economic and social aspects that affect an organisation such as a government entity. In the following, we discuss in detail our results. For each of the SWOT items, we discuss each of the PEST determinants.

4.2 Strengths

Thriving democracy is a key *Political* determinant on the PEST model, especially with the country involved in many coups in the past. The current democratic dispensation is Ghana's fourth attempt at multiparty democracy since independence in 1957 (Langdon,

2011). This fourth dispensation has lasted the longest – from 1993 to now – and this is mainly due to relatively good electoral policies and the readiness of political parties to accept results endorsed by the electoral commission (Crawford, 2009; Langdon, 2011). The government's strategic plan towards e-government implementation is an additional strength (Boateng, 2009).

Economically, the average labour cost for local ICT experts and other professionals is relatively low in comparison to those in developed nations, which is an economic determinant on the PEST analysis. With the increasing competition among various companies that provide voice and data communication services, including Vodafone and MTN (Atsu et al., 2010), citizens can easily use their phones to connect to the entire platform of e-government services.

With respect to *Social* strengths, there is also a growing interest in ICT-related courses in both trade institutions and the universities and the incorporation of ICT in early education programmes. This provides an ICT human asset that the government can utilise for e-government services. These are very important social determinants in the PEST analysis.

Although ICT infrastructure in Ghana is generally poor, ICT infrastructure in the major metropolitan areas is good (Williams et al., 2011). In terms of infrastructure, it is worth noting that Ghana has installed wireless payphone kiosks to help people in rural areas have access to phones (Foster et al., 2004). This is major *Technological* strength of e-government in Ghana.

4.3 Weaknesses

Ghana has several technological challenges with e-government implementation. *Politically*, privacy and security concerns, together with a lack of effective ICT regulatory bodies, could also hinder the acceptance of e-government services.

Economically, although the cost of ICT has continuously been decreasing according to Moore's (1965) predictions, the cost of ICT is still high for the citizens due to the general per-capita GDP in a country like Ghana; in most cases, access to the internet is very expensive. Citizens are charged a metered rate by use, as opposed to the flat-rate fees in many developed countries and thus, an average Ghanaian uses the internet only to read and send email and rarely use for other purposes. Using the internet for business and e-government services would be very expensive for a majority of citizens.

Besides poor infrastructure, there are *Social* weaknesses which include resistance to changing the way business is done. A large number of older citizens, especially those working in government institutions, are still computer illiterate and are thus discouraged by computer-related issues. Hence, acceptance or adoption of e-government services could be a problem within this demographic (Foster et al., 2004). Other *Social* weaknesses include the digital divide, which is a major problem for the nation in general and for people in the rural areas in particular (Andoh-Baidoo and Osatuyi, 2009; Foster et al., 2004). Ease and regularity of access to the internet is a major *Social* weakness especially when there is the belief that e-government has to do more than simply forms and transaction access. A connected Ghanaian population can become an informed population. A major *Technological* weakness is the relatively poor ICT infrastructure in Ghana and although there are an increasing number of ICT programmes and growing interest in these programmes, there is still a lack of endemic IT expertise in Ghana, which may require the use of expatriate expertise.

4.4 Opportunities

In spite of the mentioned threats to e-government implementation in Ghana, there are many opportunities. *Politically*, it may be important for the government to invest in the education of ICT graduates so that there are enough trained professionals with requisite skills required to work on e-government projects. To do so may reduce the costs associated with eternal consultants and contractors. Government should facilitate the establishment of ICT consultancies that would provide research and technical services for the e-government projects. *Economically*, using local IT labour and foreign organisations with ties to the nation is important because, it will facilitate a systems development process which is attuned to endemic understandings of local customs and culture. Ghana could use some of the revenue of the recently-discovered oil fields to support e-government initiatives. Thus, *economical* determinate opportunities include access to resources to finance e-government projects, especially with the discovery and mining of oil and gas in the country. This will make resources easily available to the government to invest in e-government projects and infrastructure. The government can also take advantage of the fair information practice mechanisms used in other developed nations to address privacy and security issues.

Socially, in recent times, several ICT institutions have been established and various universities are increasing the offering of ICT related programmes to develop ICT skills and knowledge. The students graduating from these institutions and programmes present growing and potential IT human assets for deploying e-government applications. In addition, several universities have been established, with many of such institutions offering technology-related courses such as computer science, management information systems and computer information systems. The government can tap IT labour from such institutions. A key *technological* opportunity is the promotion of the use of mobile systems to provide access to the internet and e-government services to citizens in the rural areas, where there is a lack of infrastructural development (Foster et al., 2004).

4.5 Threats

A number of threats have been identified. The major *Political* threats are lack of continuity and commitment to ICT programmes begun by previous governments. For instance, the GCNet project was to be completed by November 2000. However, the project was delayed because a new government came to power in January 2001 and the minister was not supportive of the project (Schuppan, 2009). Another example is the stalling of the National Identification Registration (NIR) project, which was to provide a national database on all citizens of the country to help the government provide valuable G2C services. The new government does not see this project as a priority and has thus abandoned it.

Economically, the global economic crisis can have an impact on e-government, as the government depends on foreign investment. We noted earlier that GC-Net was a collaboration between the governments of Ghana and China. Hence, a global economic crisis can make it difficult for Ghana to attract partners for its e-government services. In addition to this, lack of funding and investment for ICT and e-government projects and programmes provides a challenge. Ghana is a developing country with low per-capita income and this means that a lot of projects are competing for scarce resources. Thus, resources are dedicated to areas like health and education, to the detriment and exclusion of ICT and e-government projects. Due to the poor remuneration and lack of jobs, Ghana has observed continual outflow of talent

to developed nations; many industries and professions have suffered as a result. Thus, although there is growing ICT programmes and interest, the relatively poor salary of ICT experts could threaten growth prospects for IT professionals if they often leave for the 'greener pastures' of developed nations. Because of unemployment and high disparity in income between developed and developing nations, graduates who otherwise would enter the labour force and facilitate e-government projects instead migrate to developed countries. Ironically, this 'brain drain' is often made possible through government subsidies. However, with new resources, specifically oil resources, this situation may soon change. Global terrorism and security risks and lack of technology and investments to address these issues, especially in developing nations such as Ghana, can serve as a threat to the successful implementation and use of e-government services. *Socially*, global terrorism and use of the internet to commit fraud is a general problem in most African countries such as Ghana and Nigeria and thereby discourage people from using the internet to do business (Andoh-Baidoo and Osatuyi, 2009; Foster et al., 2004). *Technologically*, there is lack of technical savvy individuals to address the many challenges with online business in general which can hamper the success of e-government services (Foster et al., 2004).

Table 2 presents the results of both the SWOT and PEST analyses. The framework highlights the major strengths, weaknesses, opportunities and threats to e-government in Ghana. Within each of the SWOT items, we discuss the PEST determinants. For instance, the thriving democracy is a major strength to Ghana's successful implementation of e-government. Economic strengths include potential cheap labour in the form of ICT graduates. Opportunities include using oil money to support investments in ICT infrastructure and use of mobile applications to reach citizens in the rural areas, where infrastructures are poorly developed.

5 Conclusion, future research and implications

The paper presents a SWOT and PEST analyses of electronic government implementation and potential in Ghana, a nation in West Africa that has won international reputation for its democratic performance since 2000 (Crawford, 2009). We have presented the strengths, weaknesses, threats and opportunities that the nation can review as it considers electronic government implementation. We have also conducted a PEST analysis which examines the political, economic, social and technological issues involved with e-government implementation.

Research has shown that governments south of the Sahara can effectively optimise investments in ICT, health and education to improve development (Ngwenyama et al., 2006). Electronic government implementation is one of the important ICT strategies that the government can consider. The ability of the nation to implement electronic government may allow Ghana to optimise its operations and delivery of effective and efficient services and thereby reduce government spending while improving its social economic development in general. The understanding of the strengths, weaknesses, threats and opportunities as well as the specific political, economic, social and technological issues that influence e-government implementation can enable the Ghanaian government to effectively implement e-government systems, which could then lead to the benefits e-government has proven to accrue for other countries.

We have demonstrated the applicability of the use of the SWOT and PEST framework to examine e-government readiness of a developing nation. Thus, the research findings may be

Table 2 Results of SWOT and PEST analyses

	SWOT			
PEST	*Strength*	*Weaknesses*	*Opportunities*	*Threats*
Political	• Thriving democracy • Development of e-government strategic goals	• Lack of legal framework to address security issues	• Fair Information Practice Act can be used to address privacy concerns • Invest in ICT graduates and programs	• Lack of continuity of ICT projects by new governments
Economic	• Cheap and professional IT labor force	• Lack of funding for e-government projects • Relatively high price for Internet access	• Oil production revenues	• Global Economic crisis
Social	• High number of students in ICT related programs • Incorporation of ICT in early education programs	• High percentage computer illiterate population • Digital divide problems • Resistance to change • Shortage of the qualified IT specialists • Shortage of the public access to internet • Low computer literacy of public and municipality servant	• Citizenship in government operations • Enhance investment environment for telecommunication companies to provide mobile systems for citizens especially those in the rural areas	• Global Terrorism
Technological	• Well-developed communication and data transmission network infrastructure in the cities • High number of ICT programs • Rapid development of mobile and SMS technology	• Underdeveloped IT infrastructure • Slow data transmission • Lack of national data on citizens • Data security problems • Data privacy problems	• IT services provided by media companies • Decrease in Computer hardware and software products • Availability of alternative IT network infrastructure • Outbursts of IT programs with potential to supply IT labor	• Lack of technology to address global terrorism

useful for governments in nations that have a similar context to that of Ghana. This research also contributes to the literature and research on e-government on the neglected continent (Mbarika et al., 2005).

Future research could examine specific e-government implementations to see whether they have been successful or not. Additional plausible research would be to examine specific e-government services that have been implemented in the nation. Also, research could examine stakeholders: citizens, government officials and corporate leaders on their attitudes towards e-government. Finally, mobile computing will likely act as a critical component of the ICT investments that Ghana could use to implement e-government initiatives. Coupled with a national broadband wireless infrastructure, Ghanaians may develop new perspectives on personal empowerment, responsibility and agency that have not been experienced in the same manner as would have been the case in the developed nations. Skipping many steps in-between, peri-urban and rural Ghanaians may suddenly find new means of engaging their political and governmental processes that are unique and distinct. Thus, future research focusing on agency and self-efficacy in e-government and in particular, mobile-enhanced/empowered e-government, would make a contribution to the literatures on mobile computing, user empowerment and e-government.

One facet of Ghana's opportunity to utilise its recent political stability and the promise of new economic growth, is to demonstrate leadership. That an investment in ICT necessary to make such an initiative work is not in question, but the manner in which such an initiative is pursued is. Currently, the revolution in social networks and mobile devices and applications would appear to present Ghana with an opportunity to leapfrog older initiatives from developed countries. With such a move, Ghana could also provide leadership for other sub-Saharan African countries. Such a move is very much in step and in keeping with the heady goals of the UN Millennium Project: that ". . . developing countries take primary responsibility for their own development, with developed countries ensuring that transparent, credible and properly costed national development strategies receive the full support they need . . ." (UNDP, 2005, p.4) Given recent trends, it is likely that Ghana may have an opportunity to depend less on developed nations' strategies and more on 'home grown' initiatives. Our SWOT and PEST analyses reveal that Ghana has plenty of opportunity to harness technology to increase its own human development. A future for Ghana could be a nation full of 'netizens' who enjoy the same individual agency as would be the case of citizens in the developed nation. It is possible the ICT investments in e-government may empower citizens in ways that may not be obvious now. Surely it was not obvious to various leaders in Arab nations that social networks had the power to transform their own governments.

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