

Mobile phones as means for extending e-governance in rural areas of Sub-Saharan Africa

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ABSTRACT

Literature tells how well and successful e-governance, or e-service, and many more other names, given to the process whereby government services are provided to the citizens via electronic means in developed countries. Literature accounts for developing countries such as the USA, UK to name but a few, which have made headway in implementing e-governance. The general assumption in the current literature is that Africa, and Sub-Saharan African countries in particular should replicate what developed countries such as the UK and USA have done in order to achieve the same results. The author of this article challenges these widely accepted views by showing that the reported success of e-governance in developed countries has been the result of widespread availability of computers and of high levels of computer literacy which are not available in most, if not all Sub-Saharan African (SSA) countries. Thus the researcher asks the question: Given the socio-economic conditions in which the majority of people in rural areas of Limpopo live, what practical options of ICT can be used to extend e-services/e-governance to them and the people living in similar socio-economic conditions elsewhere in Sub-Saharan Africa? The research design comprised a critical literature analysis and assessment of the available publications on the topic at the time of writing.

INTRODUCTION

There is a general consensus among experts that electronic governance (commonly known as e-governance) is the future of public governance globally (Cloete 2011:128). The purpose of e-governance is, according to Cloete (2011:128) about government's willingness to provide public services, which were traditionally delivered face to face to its citizens upon their visit to public offices. These services were traditionally, and in most cases are still being offered to the citizens via pen and papers. According to Nkomo (2012:1), offering services

electronically by government and public institutions is now common practice in developed countries such as the United States of America (USA), United Kingdom (UK) and many others. However, while developed countries have moved rapidly in providing e-governance to their citizens and have achieved great success, most developing countries still lag behind (Cloete 2011). In addition, where this type of e-service might exist in developing countries, it is likely to be concentrated in urban areas and cities, with less or no service at all provided to rural areas (Pejovic 2012:2467). Availability of e-governance in rural areas of developing countries is a critical determinant of e-governance endeavours in these countries because, despite rapid increase of urbanisation in developing countries in recent years, the majority of their citizens still live in rural areas.

Government's e-services are particularly important in rural areas of developing countries because, "the failure to roll out infrastructure for e-governance in rural areas has been identified as a major obstacle to attaining government e-services in the developing world" (Nkomo 2012:3). Availability of e-governance in rural areas of developing countries is even more vital because that is actually where many people live. In addition, transport in these areas "is poor, roads are inaccessible, and government departments are scarce or non-existent" (Starley, Elis, Hine & Ternell 2002:1). The question then is how a developing country with a large number of people still living in rural areas or urban slums such as South Africa, could make the transition from paper-based systems of public administration to electronic platforms of public governance without excluding the majority of its people who do not have access to computers and internet or who do not possess the necessary skills to operate them? Should a country such as Burkina Faso with a 78.20% illiteracy rate (World Illiteracy Map 2014:1) give up on introducing e-governance to its citizens because they cannot read or write? The author believes that countries should not have to wait until their citizens' literacy levels have increased before introducing e-governance to them. This qualitative study uses the Limpopo Province, South Africa, to demonstrate that the South African government, as well as other countries in Sub-Saharan Africa could take advantage of the wide-spread availability of mobile phones to extend e-governance services to the majority of their citizens no matter where they live and what their illiteracy levels. The term Sub-Saharan Africa as used in this article refers to the 43 countries "on the African continent south of the Sahara and the six island nations close to it" (see *Encyclopedia of Education* 2002:1). It is very important to clarify that the use of Limpopo province to highlight the problems affecting the use of ICT in rural areas of Sub-Saharan Africa is in no way suggesting that the socio-economic conditions of one province in one country are completely similar to those of other provinces in the same country or any other country in SSA. The use of Limpopo province is generally based on the premise that the same problems in one area could have a similar impact on the people living in different countries.

CONCEPTUALISING E-GOVERNANCE

The terms 'e-governance', 'e-governance', 'e-governance services' and 'government e-services' have become increasingly popular" (Cloete 2011:128). These terms are often used interchangeably in the literature, but for the sake of consistency, the term e-governance is preferred in this article. A number of authors such as Manohar, Pulapa



& Mellam (2009:243) as well as Davids (2011:ii) define the term e-governance as “getting government functions and services made available online via fixed or mobile electronic networks and devices”. Literature describes the 21st century, as an “era of information technology” (IT) (Mathevula and Uwizeyimana 2014:460). It is also referred to as “digital-era governance” (DEG), and involves “reintegrating functions into the governmental sphere, adopting holistic and needs-oriented structures, and progressing digitalisation of administrative processes” (Dunleavy, Margetts, Bastow and Tinkler 2005:467). There seems to be unanimity in the literature that modern technology will, and actually is already enabling government to be more responsive to meeting citizens’ needs than ever before (Auriacombe and Van der Waldt 2014:55). Through the application of e-governance (electronic) principles citizens who have the ability to become what the current literature refers to as “e-citizens” can more easily interact with their public officials (Auriacombe and Van der Waldt 2014:55). An e-citizen is said to be “primarily the one who has been able to harness the power of the internet to transform all aspects of his/her life” (see <http://e-citizen.org/>). The Michigan government in the USA argues that “the e-citizen resource site is about expanding participation in government, encouraging community involvement, promoting a strong democracy, and improving government accountability” (Michigan government 2014:1). This new breed of e-citizens also often referred to as “net-izens” (“defined as an entity or person actively involved in online communities and a user of the Internet, especially an avid one” (Hauben 1996:1; *Wikipedia* n.d.), “call for unlimited access to information – including government information” (Auriacombe and Van der Waldt 2014:63). This is because, as Auriacombe and Van der Waldt 2014:63) further argue, “the net-izens believe that their rights must be protected and expanded, not controlled by government”. According to Hauben, Hauben, Truscott (1997:1) as well as *Wikipedia* (n.d.:1) “Netizens are also commonly referred to as cybercitizens, which has the same meaning”. Thus the ideology behind this new concept of “electracy” is that a vast “cyberspatial” revolution and renaissance is in progress [and seems to be unstoppable] at this very moment” (Auriacombe and Van der Waldt 2014:63). The term “electracy” is not to be confused with literacy as we know it. According to Arroyo (2005:684) “the concept of electracy has less to do with literacy and more to do with a combination of the concepts of “electricity” and “trace”. *Wikipedia* (n.d.:1), citing Ulmer (2003:1) argue that “electracy” is a theory by Gregory Ulmer that describes the kind of skills and facility necessary to exploit the full communicative potential of new electronic media such as multimedia, hypermedia, social software, and virtual worlds”. In simple terms, according to Ulmer (2003:1) “electracy” is to digital media what literacy is to print.” (see *Wikipedia* n.d.:1). Finally, as Auriacombe and Van der Waldt (2014:55) continue to argue “e-governance challenges all public sector organisations to innovate, and challenges the centre of government to provide the basic infrastructure that is needed to achieve these goals. After careful analysing the literature these authors came to the final conclusion that, e-governance, as we know it is based around four guiding principles: “building services around citizen’s choices, making government and its services more accessible, social inclusion and using information better” (Auriacombe and Van der Waldt 2014:55).

Auriacombe and Van der Waldt arguments led some advocates of e-governance such as Cloete (2011:28) to suggest that any “governments that do not make the transition from paper-based systems of public administration to electronic platforms of public governance

will [surely and] swiftly undermine their chances of developing their societies as 21st century information societies". This is because, in addition to improved service delivery and easy access to such services, the increased access to information has also "a "democratising effect". That is, e-governance has the potential of "politicising citizens and often mobilising them into action, which in turn has significant implications for national policy decisions" (Auriacombe and Van der Waldt 2014:55). Hence the terms "electronic democracy" (electracy) discussed in this section.

However, while there are many arguments about the role and functions of e-governance (under different but related terms) in the literature; it could be argued that the best summary of the role of e-governance in different countries that have embraced it was presented by Sunday. In his (2014) article entitled "*E-governance: An imperative for sustainable grass root development in Nigeria*", Sunday observes that "the discovery of information communication technology has made the activities of government", such as those in developed countries (UK, USA etc.) as well as some developing countries such as India, more accessible to the governed" (Sunday 2014:78). According to him the "application of e-governance has been a potent instrument in disseminating information, consultation, enhancing citizen's participation, sending feedback to the citizens, monitoring and evaluating government projects and making government accountable and transparent in its total political engagements" (Sunday 2014:78–79). Sunday (2014:78)'s analysis of the role of e-governance in western/developed countries shows that:

"the scope of e-governance revolved around e-registration, e-participation, e-taxation, e-mobilization, e-education, e-service delivery, e-feedback, e-policing, e-planning, e-debate and analyses of public financial statements. It also created awareness for the general local populace in relation to activities such as immunization, vaccination, civic education, time for collection of waste, identification of community development association in every neighbourhood and making suggestions for the betterment of government programmes" (Sunday 2014:78).

Sunday is not the only one to have identified that the success of e-governance in Western developed countries. Others such as Dunleavy *et al.* (2005:479) observe that, "in developed countries, such as the UK and USA, to name but a few, 'digital-era changes have already triggered numerous significant shifts, including a large scale switchover to e-mail in internal and external communications; the rising salience of Web sites and intranets in organisational information networks; the development of electronic services for different client groups; the growth of electronic procurement systems; a fundamental transition from paper-based to electronic record-keeping; and so on" (Dunleavy *et al.* 2005:479). The analysis of these arguments clearly suggests "that the successful e-governance implementation anywhere in the world requires a comprehensive and action-oriented strategy in order to succeed" (Houvet 2012:10). Furthermore, some authors such as Cloete (2011) suggest that all developing countries, including South Africa have taken the first steps towards introducing e-governance. Unfortunately, unlike their Western counterparts, "most of the African governments are still lagging behind" (Mdlongwa 2012:2). Following is a discussion on the use of Multi-purpose Community Centres (MPCCs) or tele centres in order to increase e-governances in rural areas of developing countries.

Bridging the digital divide between urban and rural areas through Multi-Purpose Community Centres (MPCCs)

According to Riley (2003:15) the divide between the 'e-haves' and 'have nots' is more commonly referred to as the digital divide. Harfouche (2010:73–74) identifies a new form of digital divide—the e-services divide—resulting from three types of inequalities: inequality in access to ICTs and to e-services, called the “e-access divide”; inequality in the ability to use ICT and e-services among those who have access, called the “e-skills divide”, and finally inequality between those who accept e-services and those who do not, called the “e-services acceptance divide”. The “e-access divide” and the “e-skills divide”, which are often found between urban “e-have” and rural areas “e-have nots” (Lesage 2006:3), are the main focus of this paper. According to Ntetha and Mostert (2011:128) “in an effort to narrow the digital divide in remote, in rural and disadvantaged communities, a large number of telecentres, more commonly known as multipurpose community centres (MPCCs) have been implemented by government around the world” (Snyman 2007; Cole and Roman 2001). This is also the view held by Trusler and Van Belle (2013:1), who argue that an ICT initiative that has been receiving increasing attention is that of the telecentre, and the related concept of the multi-purpose community centre (MPCC). According to Rose (1999:3), the South African government has strongly promoted the diffusion of these MPCCs throughout the country, particularly in rural areas in 1995. The country also hoped that it will reduce the “digital divide” with MPCC (Rose 1999:3), and offer a wide range of services that communities can use for their own empowerment (Thusong Service Centre n.d.:1). However, while MPCCs provide users with access to computers, the internet, fax machines and copy machines, government services, information technology, and training (Farelo and Morris 2006) successful MPCC initiatives are still few and far between (Burton 2000 cited in Trusler and Van Belle 2013:1). Thus, according to Benjamin (2000 cited in Trusler and Van Belle 2013:1), “while there is much talk in international conferences of them, there are not many successful [telecentres] in developing countries”. The reasons for the failure of these initiatives are still not clear, despite a number of research efforts (Trusler and Van Belle 2013:1). Mphidi (2009:5) argues that the greatest advantage of e-governance and its chief benefit to the society lies in its efficiency. However, one of the limitations (among many) is the limited services people who visit the MPCC get. There is a view that the quality of the services people get is affected by the inadequate level of ICT proficiency of the staff manning these MPCCs. The level of service is also affected by limitation in terms of working hours. For example, according to Mandioma (2007:6) “the aim of such initiatives was to provide government service delivery, 24 hours a day, seven days a week, for citizens who wish to use information technology”, irrespective of their geographical location. However, a telephonic conversation with the Deputy Director for Government Information Systems (GIS) about the operation of MPCCs in the Eastern Cape where Mandioma’s research was conducted, found that there has never been any MPCC operating on the 24/7/365 principle. “Even the Thusong Service Centres (which are replacing the MPCCs) only operate from Monday to Friday, although a department such as Home Affairs can use them on Saturday if they want to do so, but this is the exception, not the norm” (Interview with the Eastern Cape Deputy Director; GIS on 20 October 2014). Thus “in the main, the Thusong Service Centres’ social and administrative services are only

available during working days from 8:00 until 17:00” (Provincial Government Western Cape 2009:13). There were talks that “in Beaufort West the municipality is currently piloting around-the-clock service delivery at the Thusong Centres” (Provincial Government Western Cape 2009:13). However, a follow up interview with the Senior Communication Officer (GCIS) at the Beaufort West Thusong Service Centre categorically denied this has ever been the case (Interview with Senior Communication Officer (GCIS) at Beaufort West Thusong Service Centre, 20 October 2014). Another Thusong Service Centre which was said to be operating seven days a week is the one in the Central Karoo in the Western Cape, but the Administrator of this centre also denied their centre ever opened over the weekend (Interview with the Administrator: Thusong Service Centre in the Central Karoo, 20 October 2014). According to her, “the Thusong Service Centre opens 7:30 in the morning and closes 17:15 on week days” (Telephonic interview with the Administrator: Thusong Service Centre in the Central Karoo Municipality, Western Cape, 20 October 2014). The fact that most MPCCs (or Thusong Service Centres) operate between 08:00 and 15:00 and are closed over the weekend, suggest that people are not able to access the computers after hours and over the weekend. Yet, this is when many people are not at work and have time to spend in these centres. Mphidi (2009:6) also argues that “ensuring accessibility to all members of the society is essential” if e-governance is to succeed. In addition, people have to travel to places where the MPCCs are located, costing them money in terms of travelling and waiting time and MPCCs are public places, and the MPCC computers are shared resources. People who utilise the MPCCs or Thusong Service Centres have to spend time waiting for their turn before accessing computers, for a limited period. According to the Development Manager of one of the Thusong Centres:

“each session is 45 minutes, and the computer switches itself off every 45 minutes. The Centre Manager has to reboot and put in the access code every 45 minutes. But the user can save his/her work and can book another session if there is no one who has booked the same computer. It depends on the number of people waiting” (Interview with the Development Manager of one of the Thusong Service Centres, 20 October 2014).

Perhaps the biggest weakness of the MPCC approach is that they often target only the youth at the expense of older/senior citizens. The fact that senior people are generally left out and unable to participate in e-governance, suggests MPCCs will end up causing what Mphidi (2009:7) calls “the domestic divides”; by exacerbating the already existing “age/generation gap divide”. Some research such as the one conducted by Mpinganjira and Mbango (2013) and the one conducted by Mathevula and Uwizeyimana (2014) have already found that the older the people, the less likely they are to have the ability to use ICT. This is because, according to Mpinganjira and Mbango (2013:39), while “young people of today are undoubtedly growing up in a technological environment” this was not the case for their parents or most people who studied their primary and high school levels prior to the mid-1990’s” (Mathevula and Uwizeyimana 2014:1095, citing Mpinganjira and Mbango 2013:39). Thus the high level of illiteracy of people older than 15 years in Limpopo suggests these people also lack the ability to use sophisticated ICT equipment such as computers. In addition, the PCC model ignores the fact that “not all citizens or government officials have access to ICT tools or know how to operate them efficiently” (Ntetha and Mostert 2011:128).

It also ignores the fact that “large communities in South Africa (and also most developing countries) simply do not have access to electricity and those who happen to have access to it often experience regular power cut (Open Net Initiative 2007:1).

METHODOLOGY

The methodology adopted in this article is essentially qualitative in nature. The author adopted a review of the extant literature on e-governance and related concepts such as ICT, e-governance and e-services in an attempt to understand how far the use and benefits of e-governance and mobile technologies have been postulated in the literature. In addition to the literature survey, this article also draws on the analysis of statistical data compiled by Statistics South Africa during the 2011/2012 national census to demonstrate that certain demographic aspects that could enhance access to e-governance have been given minimal consideration or ignored by many authors who proposed e-governance approaches to be applied in Africa. The researcher uses “inductive reasoning” in order to arrive at the conclusion reported in this article (Mouton and Marais 1993:30). “Inductive reasoning (as opposed to deductive reasoning) is reasoning in which the premises seek to supply strong evidence for (not absolute proof of) the truth of the conclusion” (Copi, Cohen and Flage 2007:3; Internet sources 2010:1). However, as these authors continue to argue “while the conclusion of a deductive argument is supposed to be certain, the truth of the conclusion of an inductive argument is supposed to be probable, based upon the evidence given” (Copi *et al.* 2007:3; Internet sources 2010:1). Thus, while the researcher’s assumption in this research is that what affects a rural person in South Africa is, to a certain degree, also likely to affect the use of ICT in a rural person in other parts of Sub-Saharan Africa, given the similarities of their socio-economic circumstances, which will be discussed in detail in the subsequent sections of this article, no country’s situation is 100% similar to others in Sub-Saharan Africa. According to Uwizeyimana (2014:1, citing Acemoglu and Robinson 2006:21), “an often useful principle in building models of social phenomena is the so-called Occam’s Razor”. This author argues that “the principle, attributed to the 14th century English philosopher and Franciscan friar William of Ockham, is that one should not increase the number of entities required to explain a given phenomenon beyond what is necessary” (Uwizeyimana 2014:2). In other words, as Acemoglu and Robinson (2006:21) argues, “one should not strive for a high degree of complexity in formulating answers to complicated questions”, such as the one being analysed in this article, if a simplified analysis could give us as good an understanding of the larger and complex phenomena.

Thus, while the researcher is well aware that the use of data from nine South African provinces, and from rural areas of most, if not all countries in Sub-Saharan Africa would have been more comprehensive, he decided to focus on the data about the access of ICT tools in Limpopo Province because of practical reasons and time constraints.

Limpopo province was selected for the purpose of this study because the researcher lived in the province at the time of the research, but also because the analysis of the provincial profile shows significant similarities between Limpopo’s socio-economic conditions and those prevalent in most developing countries, especially in Sub-Saharan Africa. The following discussion attempts to illustrate the similarities between the province’s socio-

economic conditions and those likely to be found in rural areas of some selected South African provinces and some developing countries in Sub-Saharan Africa.

Limpopo's socio-economic challenges compared to Sub-Saharan Africa

According to Kyei and Gyekye (2011:55), Limpopo is South African province which consists of five District Municipalities, namely: Capricorn, Mopani, Sekhukhune, Vhembe and Waterberg and 25 local municipalities. The province has the highest level of poverty in South Africa, with "78.9% of its population living below the national poverty line" (Rural Health Advocacy Project 2013:1). It also has the lowest level of urbanisation with "74.4% of its total population located in tribal or traditional areas in 2011" (*ibid*). "This is far higher than the national average of 27.1%" in the same year (Rural Health Advocacy Project 2013:1). These statistics are relatively comparable to those found in the rest of Sub-Saharan Africa where "75% of the region's population live in rural areas" (Ericsson mobility report 2014:4). The fact that Sub-Saharan Africa is mainly rural is well captured in Dominguez Torres' (2012:4) argument that:

"Sub-Saharan Africa is [also] the second least urbanized region in the world, after South Asia. The region is home for 840 million people, from whom around 37% (or 310 million) live in cities [and the rest, 63% lives in rural areas]".

Literature shows that the percentage of population living in rural areas of Limpopo is below the national average (27.1% in 2012), and that the percentage of people in Sub-Saharan Africa cities is also below the global average. For example, according to the World Health Organization (WHO) (2014:1) "the urban population in 2014 accounted for 54% of the total global population (approximately 6,775 million) while only 37% in Sub-Saharan Africa lived in urban areas". According to Trading Economics (2014:1, citing the World Bank Report 2010:2), "the rural population in Sub Saharan Africa was last measured at 528 387 707.44 in 2010". In that year, the World Bank estimated that "the urban population (% of total population) in Sub-Saharan Africa was 28.1 (1990), 32.6 (2000) and 37.3 (2010)" (*ibid*). A simple calculation based on these World Bank statistics shows that despite increased urbanisation being reported in the media "the majority (just over 60%) of the population in Sub-Saharan Africa are still living in rural areas" (Trading Economics 2014). Only about "25% of people in Limpopo lived in urban areas" in 2012 (Dominguez Torres 2012:4).

Racial distribution of people living in rural and urban areas

The analysis of available literature shows that Limpopo province is comparatively similar to the rest of Sub-Saharan African countries in other crucial ways such as the racial composition of people living in rural and urban areas. These important features of Sub-Saharan Africa are properly emulated in the Limpopo province. For example, the available statistics show that Limpopo province's racial composition was estimated at "97.3% Black, 2.8% White, 0.2% Coloured, and 0.1% Indian/Asian" in 1996 (<http://en.wikipedia.org/wiki/Limpopo>, accessed: 25 September 2014). While recent and credible statistics on this issue are hard to come by, the available sources such as *Wikipedia* suggest that "there were an estimated 4.6 million



Africans of European ancestry on the continent in 1989” and most of them lived (and still live) in South Africa (*Wikipedia* 2014:1). According to the same website, the number of European Africans on the African Continent ranges from “4 602 000 in South Africa (2013 estimates), 200 000 in Angola (2012 estimates); Madagascar 120 000, Namibia 154 000, Tunisia 103 000 to only 6 000 in Rwanda”. The general trend seems to be between 10 000 and 25 000 in most African countries while the number of black people is counted in millions (*ibid*). This explains why the Sub-Saharan region is often referred to as “Black Africa” or “land of the blacks” in reference to its large black populations (Shahadah 2005:1; Onyeani 2009:2). In addition, the majority of white Africans live in urban areas rather than rural areas, thus suggesting that the majority of people living in rural areas of most African countries are generally black (see http://en.wikipedia.org/wiki/White_Africans_of_European_ancestry, page was last modified on 8 October 2014 at 17:51).

The most recent results from the population census conducted by Statistic South Africa in 2011/2012 shows that the provincial racial composition remains unchanged at 96.8% blacks, 0.3% coloured, 0.3% Indians and only 2.6% white in 2011 (Statistics South Africa 2011b:10). Thus Limpopo has a very large Black African population (96.7%) in comparison to the national average of 50% (Statistics South Africa 2012b). The same statistics show that 86.8% (versus 13.2% urban dwellers) of the province’s population live in rural areas, thus making Limpopo “the highest Black percentage” with the highest majority of people living in rural areas out of all the provinces” in South Africa (see Pauw 2005:7; also <http://en.wikipedia.org/wiki/Limpopo>, accessed: 25 September 2014). Other provinces where more than half of the population is rural include Mpumalanga, Eastern Cape, North West, and KZN (Statistics South Africa 2012b:21). All this evidence makes Limpopo the perfect province to use as its statistics are comparable with those in the rest of Sub-Saharan African countries.

Living conditions

Due to Limpopo’s rural make-up, according to Kyei and Gyekye (2011:55), the living conditions are substandard compared to the rest of the country (with the exception of the Eastern Cape Province). According to the data provided by Statistics South Africa (2012a:26–41) about “76.4% of Limpopo population live in formal dwellings in 2012, 13.6% live in informal dwellings and only about 52,3% of households had access to piped water inside the dwelling or yard in 2011”. This 52,3% of people with access to piped water inside the dwelling in Limpopo province is lower than the national average of 73,4% (Statistics South Africa 2012a: 42); but is a bit higher than the percentage of people with access to clean water in the rest of the rural areas of Sub-Saharan Africa. According to a recent United Nations Report (2014:1–2):

“An analysis of data from 35 countries in sub-Saharan Africa (representing 84% of the region’s population) shows significant differences between the poorest and richest fifths of the population in both rural and urban areas. For example while over 90% of the richest quintile in urban areas use improved water sources, and over 60% have piped water on premises; in rural areas, piped-in water is literally non-existent in the poorest 40% of households, and less than half of the population use any form of improved source of water” (United Nations Report 2014:1–2).

In addition, half (i.e. 50%) of households in Limpopo Province have no access to electricity and use things such as wood and coal as their main source of energy for cooking (Statistics

South Africa 2012a:38). An analysis of regional aggregates in terms of access to electricity conducted by the International Energy Agency (IEA) in 2009 shows that only 14.2% of the people in rural areas of Sub-Saharan Africa have access to electricity as compared to just under 60% (69.9%) of their counterparts in urban areas (IEA 2009:2). Thus, according to the USAID (2014:1) “more than 69% of the population of sub-Saharan Africa has no access to electricity”. The problem is however exacerbated by the fact that even those who happen to be connected to the power grid in Sub-Saharan African countries often face power supply interruptions ranging from hours to days and often weeks or months (Open Net Initiative 2007:1).

Furthermore, in addition to these living conditions described in the above paragraphs, Limpopo has the lowest average household income (with R57 000 or about US\$ 5 129.98 p.a. based on 2014 estimates) when compared to other South African provinces (Statistics South Africa 2012a:43). A survey conducted by Statistics South Africa in 2013 concluded that “Limpopo is the South African province with the highest level of poverty, with 78.9% of the population living below the national poverty line of one US\$ per day” (Statistics South Africa in 2013:1). In the same way, the most recent research conducted by GALLUP in 2011 showed that “despite significant GDP growth in sub-Saharan Africa, more people are “finding it very difficult to live on their present household income and that the trend has been worsening as it rose from 22% in 2007 to 36% in 2010” (GALLUP 2011:1). According to the same survey:

“...the median GDP per capita (PPP) across Sub-Saharan Africa increased from \$1,315 in 2007 to \$1,610 in 2010”. However, according to the same survey “even in some of the Sub-Saharan countries with healthy economic growth, such as Ghana, the percentage finding it very difficult to live on present household income continued to increase” (GALLUP 2011:1). The survey report that “Ghanaians were three times more likely to report struggling this much in 2010 (34%) than they were in 2007 (11%)” (GALLUP 2011:1).

Low illiteracy levels: Limpopo vs. Sub-Saharan Africa

The problems in Limpopo and Sub-Saharan Africa are further exacerbated by the high levels of illiteracy. According to Statistics SA (2012:22), except Mpumalanga (with 14.1%) and North West (with 11.8%), Limpopo with 17.3%, has the highest proportion of people aged 20 years and older with no schooling. John (2012:2) puts the percentage of functionally illiterate people who are over 20 years old in Limpopo is high as 19.1% and argues that the number could be as high as 31.5% (est. in 2001) if one was to lower the age to 15 years old (John 2012:1). For statistical and analytical purposes this research adopts the UNESCO (2010:1) and the African Library Project (n.d.:1) definition which states that “a literate person is someone who can read and write a short simple statement about their life”.

Access to education at the age of 15 and older is crucial in terms of e-governance because it is the age at which citizens start to have direct contact with government. For example, people start applying for their first Identity (ID) books and learners drivers licenses at age 16 in South Africa and the trend seems to be almost similar in other Sub-Saharan African countries. For example “Article 11 of Law N°14/2008 of 04/6/2008 Governing Registration of the Population and Issuance of the National Identity Card in Rwanda (a country in



Central Africa), provides for every Rwandan aged 16 and over to be issued with a national identification card within 6 months of attaining 16" (Republic of Rwanda 2008, Article 11; Ministry of Gender and Family Promotion 2011:5).

The level of illiteracy in many Sub-Saharan African countries also leaves much to be desired. According to the EFA Global Monitoring Report (2006:1) "while there are variations among countries in Sub-Saharan Africa with literacy levels of above 90% in Seychelles and Zimbabwe, the average is less than 60% of the total adult population in most of Sub-Saharan Africa who can read and write with understanding". Thus, according to the same report "Sub-Saharan Africa presents one of the lowest adult literacy rates in the world" (EFA Global Monitoring Report 2006:1). The rates of literacy are said to be "below 40% (the supposed threshold for rapid economic growth to take place) in some countries such as Benin, Burkina Faso, Chad, Mali, the Niger, Senegal and Sierra Leone" (EFA Global Monitoring Report 2006:1). "Youth literacy rates in Sub-Saharan Africa at (72%) are particularly considered the lowest of any region in the world" (see the African Library Project n.d:2).

Unemployment

The high level of illiteracy in Limpopo partly explains the observed high levels of unemployment in this province. For example, except the Eastern Cape at 37.4%, Limpopo has the highest levels of unemployment rates in South Africa with 38.9% in 2011 (Statistics South Africa 2012a:39). However, the official unemployment rate does not show the whole picture of the total unemployment rate in this province because it excludes those people who have given up looking for jobs. The broadest possible measure of unemployment or unofficial unemployment rate (which includes everyone who is able to work but has no work) stands as high as 61% especially in rural areas of Limpopo (Bhorat and Kanbur 2006:188). Unemployment is for example at 28.8% in the Waterberg District Municipality but is as high as 51.6% in Sekhukhune District Municipality (Statistics South Africa 2012a:16). The unofficial provincial unemployment average rate of 61% in some rural Districts such as Sekhukhune (Statistics South Africa, 2011c; Statistics South Africa 2012a:16); almost doubles the national average which is currently at 33.2% (Leuvennink 2013:1). Although "good data on labour markets in SSA is not easy to get" (Brookings 2014:2), the level of unemployment in Sub-Saharan Africa is above 7% on average and most of the unemployed people are the youth (see also ILO 2013).

Access to computers in Limpopo vs access to mobile phones

According to the report provided by Statistics South Africa in 2012, except the Eastern Cape with 11.9% (in 2011); Limpopo Province (with about 12%) has the lowest percentage of households owning a computer (Statistics South Africa 2012a). Furthermore, the same report shows that while about 3 092 542 of the 14 450 161 South African households have access to computers, only 175 153 of 1 418 102 Limpopo households have access to computers. That is, 88% (i.e. 1 242 949) of a total of 1 418 102 households neither own nor have access to computers in Limpopo Province. The analysis of data in Table 1 shows that contrary to low access to computers in Limpopo, most people in Limpopo do have access to a cell phone. According to Statistics South Africa (StatsSA) 12 850 874 of the 14 450 161 South

African households own/have access to cell-phones; while Table 1 shows that 88.5% (i.e. 1 254 808 of the 1 418 102) of Limpopo residents have access to a cell phone. It also shows that 86.2% of the residents of Sekhukhune, one of the most impoverished, and most densely populated rural areas of Limpopo have mobile phones (cell phones).

These findings relatively emulate what we find in countries such as Rwanda where there are 28 000 personal computers in the whole country (estimate 2006), but 56.8% of the 13 584 482 Rwandan people were mobile phone subscribers in 2014 (Trading Economics 2014:1). The same organisation shows that while only 1.9% of the people in Sub-Saharan Africa had access to personal computers in 2006, about 65.96% of them were mobile phone subscribers in 2014 (Trading Economics 2014:1).

Table 1: Access to computer–Limpopo province vs. Sub-Saharan Africa

Limpopo province						SSA(2014)
Geography	Computer	Yes	No	Total	Computer: 2011	
Limpopo	Yes	175 153	1 242 949	1 418 102	12.4%	
DC33: Mopani	Yes	32 798	263 522	296 320	11.1%	
DC34: Vhembe	Yes	40 492	294 785	335 276	12.1%	
DC35: Capricorn	Yes	52 100	290 738	342 838	15.2%	
DC36: Waterberg	Yes	27 291	152 575	179 866	15.2%	
DC47: Greater Sekhukhune	Yes	22 473	241 329	263 802	8.5%	
Total	Yes	175 153	1 242 949	1 418 102		

Source: Statistics South Africa (2012a), Trading Economics (2014:1)

Access to mobile phones: Limpopo vs. Sub-Saharan African

According to *Encyclopaedia of Education* (2002:1) “access to new communication, information, and computer technology is limited in secondary and public-sector training institutions in Africa”. Thus, there are people in Africa, especially in rural areas who have not seen a computer, have no idea what a computer looks like let alone what it can do for them. The good thing is that most of the people in rural areas of Sub-Saharan Africa have mobile/cell phones. The minimal or lack of access to computers coupled with lack of the necessary skills to operate them could partly explain why the Internet World Stats (2014:2–3) observes that “The African region is witnessing one of the strongest increases in mobile data use in the world”. The same observation was made in the Ericsson Mobility Report Appendix June 2014 where it is argued that “the mobile phone is a leading communication device in the Sub-Saharan consumer market” (Ericsson Mobility Report Appendix 2014:2). The same report argues that “mobile users in the region have shown a preference for using their device for a variety of activities that are normally performed on laptops or desktops” (Ericsson Mobility Report Appendix 2014:2).

The Internet World Stats (2014:2–3) organisation forecasts “mobile internet traffic across Africa will double between 2014 and 2015, and will see a 20-fold increase by the end of the



decade". According to Internet World Stats (2014:2–3) "mobile services still represent more than 90% of all telephone lines in service in Africa". Furthermore, as the research conducted by Internet World Stats (2014:2–3) continues to point out, "the popularity of cheaper prepaid services, which in some markets account for up to 98% of all mobile subscribers, as well as a steady fall in tariffs has meant that an increasing proportion of the population, [from lower to upper income social structures] can both access and afford a mobile phone" (Internet World Stats 2014:2–3). Available literature shows that the mobile phone system has been tried and tested and seems to be successful in most Sub-Saharan African countries. For example, according to the 2014 Ericson Mobility Report:

"Mobile banking is one such example where digital services, via the mobile phone, have moved beyond urban centres to peripheral surroundings and beyond, with significant uptake and usage in rural areas. Such areas in Sub-Saharan Africa typically experience significantly more social challenges, i.e. unemployment, and a lack of adequate and organized transportation systems when compared to their urban counterparts. Mobile banking has provided consumers with cheaper access to their finances [in countries such as Kenya] due to a reduced need to travel and the lower overall cost of using a mobile phone for financial transactions. The large number of people in Sub-Saharan Africa who do not have bank accounts suggests that mobile phones may be the only way that many people will be able to access financial services. There is strong interest in mobile financial services in Sub-Saharan Africa. 58 percent of mobile users in the region show an interest in using mobile banking and mobile wallets in future. This innovation is boosting financial inclusion at all levels of society across the region" (the Ericson Mobility Report Appendix 2014:2).

The question then is if the private sector has been successful in providing e-banking to their customers in rural areas of Sub-Saharan countries, why governments in these countries have remained sluggish in using the same technologies to increase e-services to their people? Strong evidence exists to suggest government departments can use mobile phones to communicate with the citizens in South Africa and in Limpopo and the Western Cape, to name but a few. For example, if an SMS is sent by the service provider (such as a school or the municipality) via cell phone, it is likely to reach almost everyone who has a cell phone in the municipality

Table 2: Access to cell phone: Limpopo province vs SSA

Cell phone	Yes	No	Total	Cell phone- 2011	SSA (2014)
Limpopo	1 254 808	163 294	1 418 102	88.5%	65.96%
DC33: Mopani	262 251	34 068	296 320	88.5%	
DC34: Vhembe	300 837	34 439	335 276	89.7%	
DC35: Capricorn	304 272	38 566	342 838	88.8%	
DC36: Waterberg	160 009	19 857	179 866	89.0%	
DC47: Greater Sekhukhune	227 439	36 363	263 802	86.2%	
Total	1 254 808	163 294	1 418 102	Average: 88.5%	

Source: Census 2011 Municipal report, Limpopo, Report 03-01-57 (2012: 16); Trading Economics (2014:1).

instantly. In addition, while it was not reported as such, it could be argued that the widespread availability and access of cell phones in all areas of South Africa was the reason why Pravin Gordan, the former Minister of Cooperative Governance and Traditional Affairs (COGTA) found it necessary to include short messaging services (SMSs) in his 2014 “Back to Basics” strategy “as one of the sustained interventions to improve performance of Local Government (Gordan 2014 cited in Stone and Magubane 2014:1). Municipalities could use the same method to inform residents about important events such as vaccination of children, ward meetings, water/ electricity disruptions etc. (Gordan 2014 in Stone and Magubane 2014:1).

The above analysis shows that most people in Limpopo do not have access to computers but do have access to cell phones in their own homes. The following paragraphs will demonstrate that more people in rural areas actually access the internet via their mobile phones than via computers.

Tools to access to the internet Limpopo vs. Sub-Saharan Africa

Research shows that as the standard of education rises, so does the use of the Internet (Kroukamp 2005) and vice-versa. That is, the better people are educated the more they will likely be willing and able to use the internet and the less educated will not be able to or need to use computers (Mphidi 2009:6; Mpinganjira and Mbango 2013:39). Some researches such as the Global Internet Report (2014) point to the fact that internet penetration is fast rising (at 20%) rate in developing countries (including Sub-Saharan African countries). However, access to the internet in Sub-Saharan Africa at 32% in 2012 was still below the global population average of 37.9% in 2013 (Brown 2014:22). Pidaparthi (2013:1) citing the latest data from Internet World Stats (2014:1), argues that “fewer than 16 percent of African users have access to the internet”. The same stats show that only about 8.6% use the internet in Africa as compared to “91.4% in the rest of the world” (Internet World Stats 2014:1).

In addition, Census 2011 shows the proportion of households with access to internet in South Africa has increased in 2011 compared to 2007 (Statistics South Africa, 2012a:36). The same Census also shows that Limpopo at “1.8% recorded the lowest use of the internet in South Africa”. “Only 24.3% of Limpopo households had access to internet in 2011” (Statistics South Africa 2012a:36). In fact, access to internet is still low nationally because about 9 364 518 out of 14 450 161 households in South Africa did not have any form of access to internet in 2012 (Statistics South Africa 2012a). Table 3 illustrates that 76% (or 1 072 941 out of all 1 418 102) households in Limpopo did not have any form of access to the internet in 2012. If people have less access to a computer in Limpopo and Sub-Saharan Africa, then one would ask how those who use the internet actually get it. Once again, the answer to this question is found in the analysis of the data provided by Statistics South Africa. The Open Net Initiative reports that “according to 2008 data from the International Telecommunications Union, only five sub-Saharan African countries had penetration rates exceeding 10 percent, four of which were small island nations” OpenNet Initiative 2014:2). The same organisation reports that:

“At 37.8 percent, the Seychelles have the highest internet penetration rate in all of sub-Saharan Africa; Sierra Leone has the lowest, at 0.2 percent. Nigeria, with 11 million Internet users, has the largest online population. Zimbabwe (the one non-island nation to break the 10 percent threshold) has the highest penetration rate at 10.5 percent, followed by Uganda (7.8 percent)



and Nigeria (7.26 percent) while Ethiopia lags behind at 0.4 percent, the second-lowest rate on the continent” (OpenNet Initiative 2014:2).

Thus, while the data on the instrument used to access internet in Sub-Saharan Africa countries is hard to find, a comparative analysis of the means used to access the internet in Limpopo shows that most people in Limpopo and in Sub-Saharan Africa have more people with access to internet via cell phones than via computers. Table 3 also shows that more people (209 797) in Limpopo get access to internet via cell phones than both “elsewhere” and “from work” combined (90 586). The high percentage of people accessing the internet via cell phones comes as no surprise because more people in Limpopo have access to cell phones (88.5%) than computers (only 12.4%). These percentages translate into 1 254 808 (out of 1 418 102) who have access to cell phones in Limpopo while only 175 153 of Limpopo’s total population of 1 418 102 have access to computers. These figures should motivate the South African government to include making e-governance services available to people in rural areas through cell phone devices rather than via computers.

Table 3: Access to internet- Limpopo Province

Access to internet	From home	From cell phone	From work	From elsewhere	No access to internet	Total	Access Internet: 2011
Limpopo	44 777	209 797	31 124	59 462	1 072 941	1 418 102	24.3
DC33: Mopani	8 987	46 355	5 235	10 782	224 961	296 320	24.1
DC34: Vhembe	8 157	52 977	5 206	13 161	255 775	335 276	23.7
DC35: Capricorn	14 113	52 481	11 194	18 843	246 207	342 838	28.2
DC36: Waterberg	8 321	26 482	5 699	6 515	132 850	179 866	26.1
DC47: Greater Sekhukhune	5 199	31 503	3 790	10 161	213 149	263 802	19.2
Total	44 777	209 797	31 124	59 462	1 072 941	1 418 102	Average: 24.3

Source: Statistics South Africa (2012a)

The above analysis shows that more people in Limpopo access the internet via their cell phones than via computer devices.

CONCLUSION

The objective of this article was to use the case of the Limpopo Province in South Africa to find out what the practical options were of ICT that could be harnessed to extend e-Services/e-governance to the people in similar socio-economic circumstances elsewhere on the continent. South Africa is one of the countries making progress in terms of ICT infrastructure and telecommunication networks on the African continent. However, like many other developing countries, most people in rural areas of South Africa remain

largely left out in terms of access to e-governance, because of many socio-economic factors such as lack of infrastructure, high levels of illiteracy and unemployment. High levels of illiteracy is arguably the biggest problem affecting the use of e-governance in rural areas because some researches such as the one conducted by Finnie and Meng in Canada in 2007 have linked it to employability and income (Finnie and Meng 2007:1). If employability is linked to income, then both are closely linked to affordability of ICT equipment among other things. Education is also very important because with education citizens are able to operate complex ICT equipment which require high skills, such as computers which are commonly used in the provision of e-governance services (such as MPCCs discussed above). However, neither education nor employability is a sine qua non condition for someone to own or be able to operate certain ICT equipment such as mobile phones. For example, a functionally illiterate person might not be able to read messages on his/her mobile/cell phone, but might be able to answer the phone and learn when and where his/her ID book is ready for collection. A person with the minimum basic level of education might be able to read a short message sent to him/her from the municipal office via a mobile phone and learn when and where the council or municipal meeting is taking place, when a particular service will be interrupted, when the next child vaccination will take place, etc. Most importantly a person who cannot read or write can use the service of school children in the neighbourhood or an educated relative to read service related messages sent to him/her via mobile phones. The use of school children to read letters to the spouses of immigrant husbands working in the mines or urban cities has been practiced in many rural African countries for many centuries.

This research has encouraged the increased use of mobile technology (such as cell phones) in order for governments to extend coverage of e-governance to citizens no matter where they live in the country. Some of the benefits of using cell phones to extend e-governance to the citizens in rural and remote areas of South Africa and other African countries include that most citizens, irrespective of whether they live in urban or rural areas, and irrespective of their socio-economic circumstances or their level of education, have access to cell phones. Most importantly, while most citizens in rural areas will need basic training to access e-governance through their cell phones, they have more basic knowledge to operate their own cell phones than computers. Cell phones are also beneficial, because, not only are they more popular than computers; they also require less maintenance. According to Lesage (2005:193) electronic services should be available at any time and at any place to customers. The advantage of cell phones include that people are already familiar with them and have them all the time. Even the most illiterate person can take and make the call from a cell phone. Most people with basic reading abilities can receive an SMS or send one. Most importantly, people often carry their cell phones wherever they go, and most cellphones are turned on, making it easier for their owners to access instant messages from, or to send messages to government offices. Again, unlike computers, cell phones are suitable for rural areas; while computers need electricity to function, rural areas have limited or no electricity supply at all. On the contrary, cell phones do not need an uninterrupted power supply to function. In addition, in terms of costs, cell phones are cheaper to buy and maintain because, some electronic messaging on cell phones is free or cheaper than those sent or received using computers. In conclusion, since many people (in rural and urban areas) have access, and are more able to operate cell phones than computers, and more people in rural areas

are able to access the internet from their own cell phone than computers; it would make sense and be faster to increase e-governance in rural and remote areas of any developing country through mobile technology than by computer based methods.

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