

## ICT ADOPTION IN SMEs FOR THE ALLEVIATION OF POVERTY

BUSISIWE MBUYISA

University of Pretoria / Department of Informatics, South Africa  
Busisiwe.mbuyisa12@gmail.com

AWIE LEONARD

University of Pretoria / Department of Informatics, South Africa  
Awie.Leonard@up.ac.za

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### ABSTRACT

In developing countries information and communication technology (ICT) can be used as a tool for driving socio-economic development such as poverty reduction. Small and medium enterprises (SMEs) are an engine for growth and they play an important role in poverty reduction by providing employment and driving economic development.

In this research we followed an integrated approach whereby existing theories and government policy documents were analysed. Furthermore, the empirical data of other studies were used for comparison purposes. This research presents a theoretical analysis on how ICTs can be used to alleviate poverty by SMEs in South Africa. It describes the contribution of SMEs and the impact of ICTs on economic development and alleviation of poverty. ICT usage and a discussion of the various barriers faced by South African SMEs when adopting ICT are covered. The World Bank strategy for attacking poverty is explored from a South African perspective.

A theoretical framework has been constructed using the building blocks proposed by the theory of Schwarz *et al.* (2010), as well as the insights discovered from the current literature and empirical data. The framework provides a better understanding of how poverty can be attacked through the interaction of various stakeholders involved in the process, as well as the use of ICT in the SME environment.

The results of this study will benefit the government and non-government agencies that focus on the development of the SME sector, guiding them on how best to implement ICT initiatives to achieve poverty alleviation and accelerate usage. This will contribute to informing and enabling policy formulation, regulatory practice and business operations to produce positive growth and development outcomes.

**Keywords:** Information Communication Technologies, Poverty, Small and Medium Enterprises, South Africa

### INTRODUCTION

The adoption and diffusion of information communication technologies (ICTs) has accelerated economic and social change worldwide and it continues to do so at a rapid pace. While the use of ICTs remains concentrated in developed countries, ICT diffusion is beginning to reach developing countries, including poor rural areas, bringing with it high hopes of positive development outcomes (Torero and von Braun, 2006). The debate on the benefits of ICTs in developing countries has been largely won, i.e. ICTs can reduce poverty by improving people's access to education, health,

government and financial services, ICTs can also help small and medium enterprises (SMEs) by connecting them to markets. However, the challenge of how best to use ICT for poverty reduction remains unsolved (Urquhart et.al, 2008). There are few theoretical explanations as to how ICT can be used for poverty alleviation in developing countries, hence this area needs to be explored (Kenny, 2002).

Promoting the growth of SMEs is an important aspect of building a vibrant socio-economic environment, regardless of the country in question or its level of development. The SME sector is of particular importance in developing countries because it makes up a large share of the economy and employment in the country. In addition, SMEs have beneficial qualities for developing countries, e.g. they alleviate poverty, improve welfare and enhance technical and entrepreneurial capacity (Hallberg, 2000, Torero and von Braun, 2006). SMEs, especially in developing countries, are faced with the difficult task of surviving and competing in a global market. As one of the driving forces of globalisation, ICTs may offer a number of opportunities for SMEs by making knowledge and information available, improving business-related communications, improving decision-making, responsiveness and efficiency and improving overall flexibility (Torero and von Braun, 2006). According to the South African Department of Communication's (DOC) strategy plan 2006-2009, "With a view of broadening participation in the economy, the DOC's objectives are to accelerate the usage of ICTs as a tool in all spheres of government delivery for socio-economic development, facilitate the growth and development of SMEs in ICT and other sectors and improve their sustainability through the development of new applications for e-services in the ICT sector" (Republic of South Africa, 2006). The DOC strategy plan affirms the benefits of using ICTs to accelerate the growth of SMEs and socio-economic development in South Africa.

Nonetheless, SMEs in developing countries have not been able to realise some of the benefits mentioned above because of the following constraints on ICT adoption: lack of financial resources, poor infrastructure, lack of business and ICT skills, unfavourable policies and legal frameworks, challenges posed by rapid globalisation in the form of international competition and access to new markets. Thus ICT is often underutilised in SMEs. In African countries micro-enterprises have little opportunity to grow and move to the formal sector because of the aforementioned constraints. If SMEs in developing countries are unable to exploit the benefits of ICT fully, they will be less able to compete with large firms (Torero and von Braun, 2006).

This study is a theoretical analysis conducted on the assumption that SMEs in South Africa can flourish, create more jobs and contribute to poverty reduction if they have access to the relevant ICTs. This would lead to improved income and household consumption, which would in turn lead to socio-economic transformation.

This assertion is supported by increasing evidence in literature showing that access to ICTs can have a direct impact on increasing SME productivity and raising the living standard and quality of life for the poor. The indirect impact on poverty alleviation through growth and productivity has long been recognised (Pigato 2011, Harris 2004; Torero and von Braun 2006, Okello-Obura and Manishi-Majaja, 2010). Meso *et al.* (2006) add that the use of ICTs enhances the awareness and knowledge of the nation's citizens, resulting in higher nutritional, hygiene, habitat, economic engagement and primary healthcare standards. The net effect is an improvement in the social development of the nation owing to a better educated, healthier, more economically productive citizenry and better standards

and conditions of living throughout the nation. The overall objectives of this study are to achieve the following:

- i. To analyse the impact of SMEs on economic development.
- ii. To examine the state of ICT adoption by SMEs in South Africa.
- iii. To define a theoretical framework on how ICTs can be used to enhance the social and economic livelihood of South Africans.

The specific question answered by this study is therefore:

How can ICT adoption by South African SMEs contribute to poverty reduction?

The findings of this study will benefit the government and non-government agencies that focus on the development of the SME sector on how best to implement ICT initiatives to achieve poverty alleviation and accelerate usage. According to Musa *et al.* (2005), "If the right strategies are pursued, the ingenuity, entrepreneurship, resilience and desire to participate fully in the information age by the average African would allow the region to reach acceptable living standards sooner than later."

## **METHODOLOGY**

An interpretive approach was followed in conducting this theoretical research. According to Oates (2006), "interpretive research in information systems and computing is concerned with the social context of an information system: the social processes by which it is developed and constructed by people and through which it influences, and is influenced by its social setting". The aim of all interpretive research is to understand how members of a social group, through their participation in social processes, enact their particular realities and endow them with meaning, and to show how these meanings, beliefs and intentions of the members help to constitute their social action (Orlikowski and Baroudi, 1991).

The data used in this study were obtained from various sources including academic journals where similar empirical work, such as case studies and surveys, was conducted. Thirty-six research articles were examined; these articles were sourced from various global information systems and developmental journals. The research articles were categorised using Culnan's (1987) five topic-oriented research categories. These topic categories include:

- i. research foundations/frameworks,
- ii. individual approaches to information systems,
- iii. organisational approaches to information systems,
- iv. information systems management, and
- v. information systems curriculum.

Since the objectives of the study include defining a theoretical framework that will improve the social and organisational aspects of South African SMEs by using ICT, the foundation and organisational approaches to management information systems (MIS) design and use categories were selected (Orlikowski and Baroudi, 1991). Culnan's (1987) individual approaches to information systems, information systems management and curriculum categories were excluded. The distribution of articles according to Culnan's (1987) categories is presented in Table 1:

*Table 1: Research Articles Classification by Category. Source: Culnan, 1987.*

Research Category	Number of Research Articles Reviewed
Foundation (Frameworks)	4
Organisational Approaches to MIS Design and Use	32

The data used also included a review of South African government departments' policies, strategy documents, white papers, reports and documentation from other global development agencies that have conducted initiatives on ICT adoption and the development of SMEs. The policy and strategy documents were sourced from the South African government departments' and global agencies' websites. A summary of the government department and global agencies documents reviewed is presented in Table 2:

*Table 2: A summary of the government department and global agencies documents reviewed, Source: Culnan 1987*

Source	Document	Theme
<b>Republic of South Africa, Department of Communications</b>	Public Access to Information Act	Access to compelling news, information, education and creative expression.
	Reconstruction and Development Programme (RDP)	Access to national, regional and community content via a range of services, devices and platforms
	Telecommunications, Broadcasting and Postal Services White Papers	The role of the communications sector in enabling and promoting social development
<b>Republic of South Africa, The Presidency</b>	National Development Plan 2030	The role of the communications sector in providing the infrastructure, services and applications to grow the South African economy.
<b>Republic of South Africa, Department of Trade and Industry</b>	National Small Business Act	Guidelines for organs of state to promote small businesses in South Africa
	Annual review of small businesses in South Africa: 2005- 2007	Progress made on SMME ownerships based on equity targets.
<b>Statistic South Africa</b>	Quarterly Labour Force Survey	Data on labour market activities for individuals in South Africa
	Millennium Development Goals, Country report 2010	South Africa's progress report on the Millennium Development Goals.

<b>World Bank</b>	Achieving Millennium Development Goals in Africa	Prospects, progress and policy implications
<b>African Development Bank</b>	World Development Report, Attacking Poverty 200/2001	Global poverty statistics and Poverty reduction strategy

## LITERATURE REVIEW

### Impact of SMEs on Economic Development

SME definitions vary from country to country; the definition of SMEs in South Africa is determined by the National Small Business Act of 1996. The Act defines a small business as “a separate and distinct business entity, including cooperative enterprises and non-governmental organisations, managed by one owner or more which, including its branches or subsidiaries, if any, is predominantly carried in any sector or sub-sector of the economy” (Republic of South Africa, 1996a).

Small enterprises are classified as having on average fewer than 50 employees, less than R32 million in revenue and less than R6 million in assets. Medium enterprises have on average fewer than 200 employees, less than R90 million in annual turnover and less than R19 million’s worth of total assets. Micro-enterprises have fewer than five employees, less than R2 million in annual revenue and less than R1 million in total assets (Republic of South Africa, 1996a).

SMEs play an important role in economies all over the world by creating jobs and contributing to the socio-economic development of their communities (Wolcott et al., 2008). The development of the SME sector has been prioritised by the South African government, fundamentally for economic and social growth. The main reason for growing this sector stems from the potential that it has in bridging the gap between the first and second economy through poverty reduction, employment creation, economic empowerment and innovation. In developing and developed countries the vast majority of firms are SMEs; on average they comprise over 95% of the economy.

In Mexico and Thailand approximately 97% of the firms are SMEs, in the United States over 96% of firms have fewer than 50 employees, in Hong-Kong and Japan 98% of enterprises are SMEs (Kotelnikov, 2007). In South Africa the SME sector is reported to have contributed 35% to the country's GDP in 2008.

The sector's contribution to private sector employment was in the vicinity of 54% during the same period. The number of SMEs in South Africa has been estimated at between 1.8 and 2.6 million (Republic of South Africa, 2005). SME statistics in South Africa refer to businesses that are registered (formal) and those that are non-value added tax (VAT) registered (informal). Table 3 shows the distribution of SMEs among the nine provinces in South Africa. The Gauteng province has the highest number of businesses, both in the formal and informal sectors. The Western Cape has the second largest number of businesses in the formal sector. Provinces such as KwaZulu-Natal, Limpopo and Mpumalanga that have large rural populations have higher percentages of informal businesses (Republic of South Africa, 2008).

Table 3. Distribution of SMEs in Formal and Informal Sectors. Source: Republic of South Africa, 2008

Province	Formal Sector (2005)	Informal Sector (2007)
Eastern Cape	5.3%	13.4%
Free State	3.2%	6.6%
Gauteng	48.3%	24.6%
KwaZulu-Natal	13.0%	18.8%
Limpopo	2.9%	14.3%
Mpumalanga	4.1% <sup>c</sup>	7.7%
North West	3.2%	8.0%
Northern Cape	1.2%	0.7%
Western Cape	19.0%	5.9%
Total	100% (512,518)	100% (1,747,578)

The statistics mentioned above give an indication of the pivotal role that SMEs play in addressing the country's development challenges such as employment and economic growth.

The SME sector employs most of the world's poor people; it increases the average productivity of labour in a country by employing the average unemployed low-skilled labour force that is actively seeking employment (Bacon and Hoque, 2005; Locke, 2004). Governments around the world have recognised the role played by SMEs in development. As a result government policies have been crafted to support SME sector growth through programmes that range from tax incentives, technical assistance and training to other business development services (Esselaar *et al.*, 2007).

The promotion of SMEs is a key element in the Government's strategy for employment creation, poverty alleviation and income generation. The Reconstruction and Development Programme (RDP) is one of the policies formulated in South Africa that was very specific in identifying ICTs as key in meeting the goals of basic needs: "The RDP aims to develop a modern and integrated ICT that is capable of enhancing, cheapening and facilitating education, health care, business information, public administration and rural development, and to develop a Southern Africa[n] co-operative programme for telecommunications" (Republic of South Africa, 1996b).

### SMEs and ICT Usage

South Africa is a developing country with high unemployment, sluggish economic growth and high levels of poverty and inequality. The growth potential of the country can be accelerated by taking advantage of benefits that ICTs have to offer. South Africa lags behind the rest of the world in terms of providing affordable and reliable access to telecommunications and the internet. Access to fixed line telephony has been declining over the past several years, rather than increasing. On a per capita basis, the number of fixed telephone lines has declined by 12% from 2001 to 2007. To some extent

this reflects a switch by consumers from fixed line to mobile telephony. The decrease in the number of fixed lines reflects not only pull factors to mobile telephony, but also problems with the fixed line market. Although fixed line telephony penetration rates have been poor, growth rates in mobile telephony have been very strong, which has probably contributed to a net improvement in access to telephony. Over the period 2001 to 2007, per capita cellular subscriptions increased by 364%. Most South African SMEs use mobile technologies and are using these technologies for information sharing (Republic of South Africa, 2010a; Vosloo and Van Belle, 2005).

The results of a study conducted by Esselaar *et al.* (2007) on SMEs in 14 African countries (including South Africa) on ICT usage indicates that mobile phones have overtaken computers as tools in supporting the running of SMEs, given their prevalence and accessibility. The focus on mobile technologies by SMEs is both an advantage and a disadvantage. It is an advantage because it provides the SMEs with a low cost base and the ability to communicate with suppliers and customers easily. The disadvantages that mobile technology poses to SMEs are its limited functionality and ability to develop as an SME develops, as well as the associated high usage cost (Esselaar *et al.*, 2007).

The uneven distribution of access to ICTs has highlighted a digital divide that separates individuals who are able to access computers and the internet from those who have no opportunity to do so. In South Africa urban areas have high-end technologies, while rural areas remain underdeveloped and lack the basic infrastructure required in a knowledge economy, such as electricity and telephone lines. The results of a study conducted by Ismail *et al.* (2011) reveals that SMEs in South Africa invest in general use ICT technologies, e.g. internet, bulk SMS, VoIP, organisational websites and intranets. This stems from the fact that owners lack knowledge and awareness of the technologies available in the market, as well as the benefits to be attained from those technologies.

### **Barriers to ICT Usage**

SMEs in South Africa experience critical barriers to ICT adoption and use. Some of the key barriers include ICT costs being too expensive, lack of finance, lack of awareness about the benefits of ICT adoption and use, low employee skills levels, security concerns and ICT applications not tailored to the way SMEs do business (Ismail *et al.*, 2011; Esselaar *et al.*, (2007).

Informal businesses bear the brunt of high ICT costs and they have little support infrastructure. Many government programmes are aimed at the formal small business sector, leaving the informal sector to fend for itself. Informal businesses are less likely to have access to the banking system for credit than formal businesses. The barrier of high ICT costs raises a need to implement regulatory and policy changes aimed at reducing costs and facilitating competition in the ICT sector (Ismail *et al.*, 2011).

Telecommunication across Sub-Saharan African is sub-standard, as evidenced by the historically limited number of landline telephones. Lack of competition in the telecommunications sector contributes to most of the problems experienced in this industry. It is estimated that there are more telephone lines in New York City than in the whole of Africa. The low numbers across Africa are a symptom of a poor socio-economic development level, since the two go together (Mbarika *et al.*, 2002). Given the state of infrastructure in Africa, network problems with fixed lines are also regarded as a major obstacle for SMEs in adopting ICTs (Esselaar *et al.*, 2007).

Illiteracy is a serious problem for most of Sub-Saharan Africa. In 2002 the United Nations Education, Scientific and Cultural Organisation (UNESCO) indicated that about 40% of the people in Sub-Saharan Africa were illiterate (UNESCO, 2002 cited in Musa et al., 2005).

The owners of SMEs on average are less educated and lack knowledge on how to use computers and applications that would be beneficial in running their businesses. Moyi (2003) proposes that this challenge could be overcome by developing SMS-based business applications, since most of the owners are familiar with and have access to mobile phones.

### **Poverty and Unemployment in South Africa**

According to the World Development Report 2000/01 of the world's six billion people, 2.8 billion (almost half) live on less than US \$2 a day and 1.2 billion live on less than US \$1 a day, 24.3% of them living in Sub-Saharan Africa. An income level of US \$1 a day is regarded as extreme poverty from a development perspective. Income is regarded as one indicator of poverty among others that include powerlessness, voicelessness, vulnerability and fear. Another definition of poverty sees it as "being deprived of information needed to participate in wider society, at the local, national and global level" (Harris, 2004).

At the United Nations Millennium Summit in 2000, the international community reached consensus on working to achieve eight critical economic and social development priorities by 2015. As a member state of the United Nations, South Africa has endorsed its commitment to achieve the following Millennium Development Goals (MDGs):

- i. MDG 1: Eradicate extreme poverty and hunger.
- ii. MDG2: Achieve universal primary education.
- iii. MDG3: Promote gender equality and empower women.
- iv. MDG4: Reduce child mortality.
- v. MDG5: Improve maternal health.
- vi. MDG6: Combat HIV/AIDS, malaria and other diseases.
- vii. MDG7: Ensure environmental sustainability.
- viii. MDG8: Develop a global partnership for development.

The South African government has implemented mechanisms to track and monitor progress with the implementation of the MDGs. The MDGs have been integrated into the Medium Term Strategic Framework 2009-2014, which translates the five priorities of the ruling party into Ten Strategic Priorities for Government. The targets for MDG 1 and MDG 8 are indicated below (Republic of South Africa, 2010):

- i. MDG1: Eradicated Poverty and Hunger - Halve between 1990 and 2015 the proportion of people whose income is less than US \$1 a day.
- ii. MDG8: Develop a Global Partnership for Development - In cooperation with the private sector, make available benefits of new technologies, especially information and communications.

The countries of Sub-Saharan Africa are furthest away from reaching their goals. South Africa will not have reached its goals, but it will be closer to achieving them than any other African country.

Reports thus far indicate the country is ahead of schedule on many targets, but is lagging in the attainment of others.

The acceleration of progress towards meeting the MDGs will require action from African countries and support from the international community for ventures that promote SME development (African Development Bank, 2002).

In South Africa a decline has been noted in the population living on less than US \$1 a day. The decline is from 11.3% in 2000 to 5% in 2006. While poverty has been halved for both males and females, the proportion of females living on less than US \$1 per day remains high compared to that of males: 12.0% (females) and 10.0% (males) in 2000; 5.3% (females) and 4.8% (males) in 2006 (Republic of South Africa, 2010).

It is unlikely that South Africa will meet this MDG at US \$2.50 per day even though the proportion of those below this threshold indicates a declining trend across time, namely from 42.2% in 2000 to 34.8% in 2006. Evidence of a decline in absolute poverty is further confirmed by commensurate declines in the poverty gap ratio. The average poverty gap is the average amount by which a proportion of the population falls below a given poverty line. This ratio declined from 3.3 in 2000 to 1.1 in 2006 at the US \$1 per day threshold (Republic of South Africa, 2010).

In the South African context, poverty and unemployment remain structurally inter-linked. The racial distribution of poverty in South Africa shows that interracial inequality remains high. In this regard, the black African population, which in 2006 constituted 79.4% of the population and 76.8% of households, earned 41.2% of the 747.6 billion ZAR of income. In contrast to this, 45.3% of that income was earned by white persons who constituted only 9.2% of the population (Republic of South Africa, 2010).

The Statistics South Africa Quarterly Labour Force Survey (2013) reveals that the number of unemployed persons increased by 100 000 people to 4.6 million between the fourth quarter of 2012 and the first quarter of 2013. This took the country's official unemployment rate to 25.2% in the first quarter of 2013 from 24.9% in the fourth quarter of 2012. The report further states that the number of discouraged work seekers increased by 73 000 to 2.3 million between the fourth quarter of 2012 and the first quarter of 2013 and young people (between 15 and 34 years old) accounted for 70,7% of the unemployed persons (Republic of South Africa, 2013).

If this trend persists, South Africa will not only fail to meet the government's target of creating five million new jobs between 2010 and 2020, but end up with a net loss of jobs over those ten years. The employment-to-population ratio in South Africa since 2001 has been low, averaging 51% for males and approximately 37% for females. The national average is approximately 43%. This ratio suggests a high level of unemployment in South Africa, which although down from a high of 29% in 2000 to a low of 25, 2% in the first quarter of 2013, is still high by any standard (Republic of South Africa, 2010; Republic of South Africa, 2013).

The proportion of households with access to the internet has risen from only 7.2% in 2007 to 11.1% in 2009. The highest levels of access are clustered in areas of high per capita GDP, in particular the Western Cape and Gauteng. Households in these provinces are around eight times more likely to have internet access than those in Limpopo, the province with the lowest internet access levels (Republic of South Africa, 2010).

In 2009 the City of Johannesburg rolled out a R1 billion initiative, called the Johannesburg Broadband Network Project. The telecommunications infrastructure initiative aims at rolling out a high-speed broadband network, which will bring the City of Johannesburg in line with international city trends. The objectives of the initiative include stimulating socio-economic growth through the reduction of telecommunications costs, job creation in the field, increasing accessibility of IT and digital inclusion. The city will roll out the network to central areas as well as the most underserved parts of the city, thus allowing SMEs to flourish by providing broadband services to their communities (Republic of South Africa, 2010b).

### **The Role of ICT in Poverty Alleviation**

Lack of access to ICT is hardly a characteristic that identifies the poor. The poor face a number of challenges such as lack of food, basic health care, shelter and low levels of education and have a limited ability to make choices and lead the lives that they value. On the contrary, the better off have access to better health care facilities, education, more work opportunities and access to global information. The sources of information produced and shared by the poor are informal and often unrecorded. Lack of infrastructure, especially in developing countries, results in the poor being deprived of the information and knowledge that would help them to live healthier lives and to improve their educational standards, employment and business opportunities. ICTs have the potential to process and disseminate vast amounts of information and can therefore have a far greater impact on the lives of the poor than informal information networks. ICTs enable SMEs to improve productivity and income generation by allowing them faster and cheaper access to market information and may strengthen forward linkages to the market (Pigato, 2011).

The World Bank Report 2000/01 proposes a strategy for attacking poverty through ICTs in three ways: promoting opportunity, facilitating empowerment and financial risk mitigation (Cecchini and Scott, 2003). The following section highlights ICT initiatives that focus on attacking poverty according to the World Bank strategy.

#### *Promoting Opportunity*

Opportunity makes the markets work for the poor and expands their assets. The core policies that are essential in creating more opportunities involve actions to stimulate growth. Investment and technological innovation are the main drivers of growth in jobs and labour income. International markets also provide a huge opportunity for job and income growth.

Countries involved in international trade often experience major reductions in income poverty. Creating opportunity also requires building human, physical, natural and financial assets that poor people own or can use (Cecchini and Scott, 2003; World Bank, 2000).

Small farmers in rural areas often lack access to information about prices, data on crops, weather conditions, credit facilities and market opportunities. Access to ICT can remedy the lack of information and improve poor people's entrepreneurship by connecting them to markets. In Gujarat, India, computerised milk collection centres with integrated electronic weights, electronic fat-testing machines and card readers were implemented to ensure fair pricing for farmers who sell milk to dairy cooperatives. The introduction of ICTs in the milk collection centres increased transparency in pricing, led to faster processing, shorter queues and immediate payment to farmers (Cecchini and Scott, 2003).

In the rural village of Kgautswane in South Africa, an ICT initiative to implement an e-procurement solution was conducted to address socio-economic challenges faced by the poor community. The local small-scale retailers in Kgautswane faced a number of challenges when conducting their businesses, including lack of stock, long distances and expensive transport to suppliers and low stock turnover. The consequences of the challenges faced by the retailers were passed on to the community, e.g. items were expensive because the retailers wanted to recover the costs and the shops were closed for extended periods, making it difficult for customers to get items on time. The study also revealed lack of collaboration among the small-scale retailers. The e-procurement solution was developed to run on mobile phone browsers. The implementation of the solution enabled the informal economy to be connected to established markets. The solution also enabled the rural small-scale retailers to track and document their business transactions, save costs on the procurement process and spend more time running their businesses. The outcomes of the solution also benefited the community, among others because the shop owners were able to increase the range of products being supplied (Ngassam *et al.*, 2013).

### *Facilitating Empowerment*

Empowerment makes state institutions work better for the people and removes social barriers. The removal of barriers on social and state institutions enables economic growth and poverty reduction (Word Bank, 2000).

eGovernment in Africa has been promoted by developed nations as a remedy for poverty-related problems (Ochara, 2008). eGovernment is the use of ICT to transform government by making it more accessible, effective and accountable (Farelo and Morris, 2006). In South Africa, ICT has been adopted as a cornerstone for Batho Pele (people first), a government policy that stipulates how public officials ought to engage with citizens. The principles of Batho Pele are aimed at promoting a participatory approach to public service delivery that is citizen-oriented, using among others strategies driven by ICT (Twinomurinzi *et al.*, 2012; Republic of South Africa, 2010c). eGovernment is one of the tools that have been used by the South African government to make services accessible to its citizens. Based on the fundamental human right to have access to information, the South African constitution places an obligation on the State to provide access to government information. In response to this obligation the South African government, together with the private sector, has implemented various ICT initiatives aimed at alleviating poverty and the effects of social exclusion. Among the ICT initiatives implemented are the Cape Gateway project, Mindset Network Organisation, SchoolNet South Africa Project, Khaya Project and the Thusong Service Centres (TSC) in rural areas. The main objective of the TSCs is to provide comprehensive services and information from government to communities close to where they live as part of a strategy to better their lives. Each TCS provides standard government services relating to social grants, health, education, passports and identity documents. The government envisages having at least one TSC in each of its 283 municipalities before the end of 2014 (Twinomurinzi *et al.*, 2012; Evoh, 2007; Riordon, 2009; Matavire *et al.*, 2010; Republic of South Africa, 2007).

The benefits derived from eGovernment initiatives include shrinking information and communication costs, maximising speed, broadening reach and eradicating distance (Matavire *et al.*, 2010; Jaeger and Thompson, 2003).

### *Financial Risk Mitigation*

In the World Bank report (2000), the section on financial risk mitigation is entitled enhancing security. In this paper the title of this section is changed to financial risk mitigation, as security is a broad term. Micro-finance is an important tool for poor people to reduce, mitigate and cope with financial risk. Micro-finance enables the poor and their micro businesses to gain broader access to financial services (Cecchini and Scott, 2003). The Grameen Bank in Bangladesh has become an international model for micro-credit as a poverty alleviation strategy. The Bank provides small loans to the poor for small-scale self-employment activities, focusing on women as the main beneficiaries. The Bank's poverty alleviation strategy is grounded in a keen awareness of cultural context, which conditions women's willingness and ability to respond to economic opportunities. The Bank's strategy on improving women's economic status is viewed as the foundation on which better social and political status can be built.

One innovative programme that the Grameen Bank is credited with was to extend the infrastructure in rural villages for borrowers to buy mobile phones and sell phone services in their villages. By June 2002 the Bank had granted loans for 14 443 village pay phones (Moodley, 2005).

The Grameen telecom experience can lower transaction costs; the telephone services are likely to yield more benefits to the poor and to improve the social status of small enterprises and the families of the owners (Bayes, 2001).

Post-1994, the South African government adopted the White Paper on the National Strategy for the Development and Promotion of Small Business in South Africa (1995). The objective of the strategy was to create an environment that enables accelerated growth for small businesses subsequent to a history of dominance by large, capital-intensive firms that suppressed small enterprises (Republic of South Africa, 2003). The South African government, through the Department of Trade and Industry, has introduced several institutions and mechanisms mandated to deliver a wide range of key services, both financial and non-financial, to assist SMEs. Some of the initiatives and institutions that offer support to SMEs in South Africa enable the following (Republic of South Africa, 2005):

- i. Access to finance by small enterprises through the establishment of financial products and services comprising loans, and incentives offered by the National Empowerment Fund, South African Micro-Finance Apex Fund, and Industrial Development Corporation.
- ii. Easing the regulatory and compliance burden through a reduction of tax compliance on small enterprises. As part of skills development, various sector education and training authorities have been developed, aimed at implementing small business skills development programmes.
- iii. Youth enterprise development through the National Youth Development Agency Fund.

In addition to the above, various other private sector, non-governmental organisations (NGOs) and academia initiatives do exist to support SMEs (Republic of South Africa, 2005).

### **Theoretical Framework**

The purpose of this section is to construct a theoretical framework that gives a better understanding of how poverty alleviation can be achieved through the use of ICT in the SME environment. Furthermore, the framework intends to show the interplay between the important role players, namely the South African government, intermediaries, SMEs, ICTs and communities. The

construction is achieved by using what is available in literature in terms of existing frameworks and theories, as well as available government policy documents in this regard.

In the available literature only a few models or theoretical frameworks are introduced that explain how poverty alleviation can take place by using technology (Harris, 2004; Obayelu and Ogunlade (2006), Moodley (2005) and Schwarz *et al.* (2010)). The work of Obayelu and Ogunlade (2006) was based on that of Harris (2004). The work of Harris (2004) suggests a framework that facilitates an understanding of how ICT can help alleviate poverty. According to this framework, poverty alleviation begins with the development of a pro-poor ICT policy and a development commitment by government, acknowledging its role as a major employer and user of ICTs.

This leads to the development of infrastructure that will be required to achieve widespread poverty alleviation through local access by new or existing institutions such as libraries, multi-purpose community centres, post offices etc. to ensure that access is used to the best effect. The services are directed at and delivered to the local access points of the poor people who need them.

Obayelu and Ogunlade (2006) took the work of Harris further and explained the importance of gender empowerment as a building block in poverty alleviation. In this paper we acknowledge the previous work and see the work of Schwarz *et al.* (2010) as a good basis for this research because it allows one to look at the problem from an organisational viewpoint with special emphasis on the SME environment. The Dynamics Capabilities Theory (DCT) Model of IT-enabled Organisational Performance of Schwarz *et al.* (2010) is therefore used as basis to construct the theoretical framework. Dynamic capabilities are “processes that use resources to integrate, reconfigure, gain and release resources to match and even create market change (Eisenhardt and Martin 2000).

According to Schwarz *et al.* (2010), the availability of IT resources that use the global IT infrastructure leads to the creation of IT-enabled business processes, as depicted in Figure 1. IT-enabled business processes represent the extent to which IT enables the specific ordering of work activities across time and space, with a beginning and an end, and clearly identified inputs and outputs (Schwarz *et al.*, 2010).

Schwarz *et al.* (2010) further argue that IT-enabled business processes in themselves do not lead to organisational performance, but the efficiency gains through such business processes leads to organisational performance. Therefore, according to Schwarz *et al.* (2010), business process performance is defined as the operational efficiency of business processes, and this leads to organisational performance. The DCT is based on the assumption that the competitiveness of a firm lies in its ability to leverage the IT-enabled processes. This implies that the presence of IT resources alone does not lead to performance gain; rather leveraging these resources drives performance (Schwarz *et al.*, 2010)

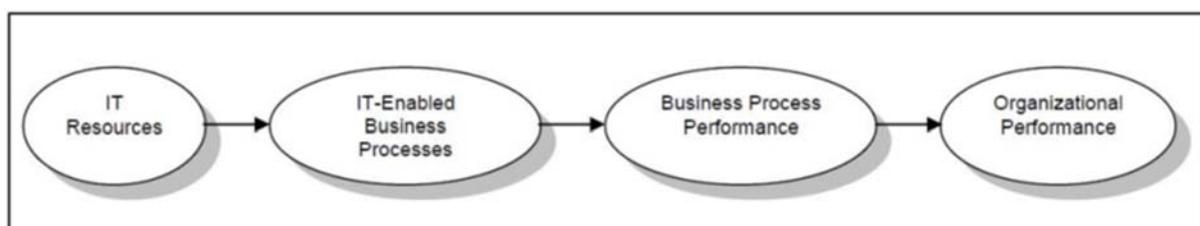


Figure 1. A Dynamics Capabilities Theory Model of IT-enabled Organisational Performance. Source: Schwarz *et al.*, 2010.

We argue that if the theory of Schwarz *et al.* (2010) is valid for an organisational environment, it is also valid in the case of a community that is dependent on services provided by SMEs. In this regard the community is seen as the “organisation” and the SMEs are seen as the business processes that support or serve the community. If the SMEs can absorb and apply the available IT in an innovative way, the community will reap the benefits in terms of receiving better services and becoming more knowledgeable regarding the use of IT. This would not only encourage them to expect more from SMEs but also to improve their own living standards. The study conducted by Torero and von Braun (2006) on the impact of ICTs on developing country SMEs affirms a positive correlation between ICT access and improved SME performance, as well as the impact on poor communities. The use of ICTs in design and marketing activities increased the competitiveness of the Indian garment industry for small enterprises. The Indian garment industry sheds light on possible opportunities to advance labour-intensive industries through the use of ICTs, enabling them to remain competitive in international markets while offering significant job opportunities to poor communities.

In summary therefore, Table 4 below depicts the different building blocks used in constructing the theoretical framework and the corresponding theoretical references:

*Table 4: Theoretical Framework Building Blocks*

<b>Theory Discussed in this Paper</b>	<b>Building Block for Theoretical Framework</b>	<b>Translation of Theory to Building Blocks</b>	<b>Theoretical Reference</b>
IT resources	Available IT resources		Schwarz et al. (2010) Moodley (2005)
IT Enabled Business Processes	SMEs	SMEs are used as a substitute for IT-enabled business processes because of the efficiency gains they derive for the communities from the use of ICTs.	Schwarz et al. (2010) Torero and von Braun (2006)
External World Bodies	External World Bodies		World Bank, 2000 Moodley (2005)
World Bank Poverty Alleviation Strategy: Create Empowerment, Opportunity, and Financial Risk Mitigation	South African Government Support		World Bank, 2000
Organisational Performance	Communities	Communities are used as a substitute for organisations.	World Bank, 2000 Schwarz et al. (2010)

Figure 2 below illustrates a theoretical framework proposed for poverty alleviation

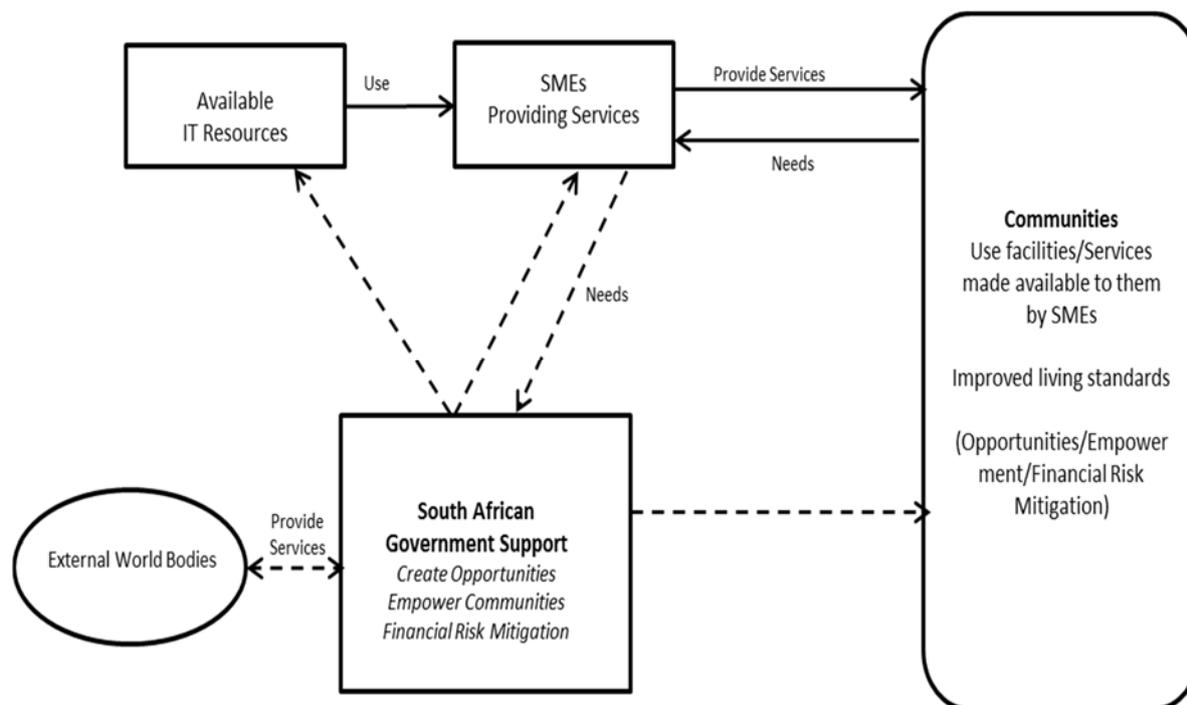


Figure2. Theoretical framework on the role of ICT adoption in SME's for the alleviation of poverty

The South African government has embraced the philosophy that ICT represents modernisation and is seen as a key to poverty alleviation (Moodley, 2005). According to Harris (2004), the application of ICTs to alleviate poverty should always begin with a development strategy. The South African government should acknowledge its role as a major player in defining a development strategy that will target the poor. This strategy needs to be driven from a bottom-up perspective to ensure that the developmental needs of the poor are addressed. The World Bank Strategy on poverty alleviation serves as a good basis for ensuring that the needs of the poor are heard by creating opportunities, empowerment and providing financial risk mitigation. The South African government can learn from the bottom-up strategy of poverty alleviation used by the Grameen Bank by providing the poor with ICT through micro-credit schemes that have the potential to improve poor people's socio-economic status, increase empowerment and lift their families out of poverty (Moodley, 2005).

Given the widening gap between the information haves and have-nots in South Africa, the government needs to ask the following question: "How can we create an environment where information flows much more freely and widely, and where communication is easier, broader, and more inclusive within our society so as to create more participatory and inclusive societal processes?" (Moodley, 2005). The existing ICT policies and legislation in South African need to be reviewed and should ensure equitable and affordable access, especially to SMEs, since this sector has great potential to improve the lives of the poor and alleviate poverty by creating employment. The government can create incentives for the private sector to extend public access of ICTs to disadvantaged communities.

In order for South Africa SMEs to be economically competitive, the country needs to increase investment in infrastructure and accessibility of ICTs. The investment in ICT resources must be complemented by the following resources to ensure that the investment is not wasted: data,

financial and human resources. It is important for the South African government to understand the information requirements of SMEs and ensure that the ICT resources drive their needs rather than focusing on being technologically relevant (Moodley, 2005). The importance of ensuring that ICT needs are user-oriented and not technology-driven is echoed by Mansel and When (1998) as follows: “there is substantial evidence that if applications do not reflect user needs or involve them in the process of development, they simply will not bring the expected benefits. They are likely to create new problems that will be costly to address. If the specific social, cultural and economic conditions, the expertise and commitment of users, and components of the infrastructure are not assembled together, ICT applications will fail to yield benefits.”

Partnership among various South African government departments are required to ensure that the investment in ICT and other resources supports the poverty alleviation agenda, i.e. the Departments of Basic and Higher Education, Department of Small Business Development, Department of Science and Technology and the Department of Telecommunications and Postal Service. The fight against poverty also requires the South African government to partner with external world bodies, NGOs, civil society groups and the private sector as intermediaries to address the information and communication needs of poor communities.

The framework discussed above will enable the delivery of South Africa’s national development plan of reducing poverty and inequality by 2030 through having an active citizenry in which government, business and communities work together to enable the poor to have what they need to live the lives they would like by using ICT as a tool to fight poverty and unemployment (Republic of South Africa, 2011). Moodley (2005) adds that “ICT can be empowering when the various technologies are used to support poor communities’ control of their own development, where they promote dialogue within and between communities, and where they reflect information about the community portrayed as equals with the wider world”.

## **CONCLUSION AND RECOMMENDATIONS**

This paper provides evidence of the benefits of ICT and the role that it plays in enabling development and poverty alleviation. In view of the positive contributions of ICT to economic growth and development, there are good reasons for governments to promote the use of ICTs in the business sector, especially SMEs for poverty alleviation (Okello-Obura and Manishi-Majanja, 2010). The multidimensional view of poverty requires the use of pro-poor strategies to deal with this complexity through promoting opportunity, facilitating empowerment and mitigating financial risk. The South African government has committed itself to attaining eight MDGs by 2015, one of which relates to making available the benefits of new technologies, especially information and communications, to all. In South Africa great progress has been made towards the attainment of the MDGs and initiatives are under way to achieve the set targets. Given the contribution of SMEs to the South African economy and their impact on poverty alleviation, the government has an important role to play in ensuring that they receive the necessary support to enable them to thrive in the local and global economy.

Sustainable poverty reduction requires the creation of pro-poor ICT strategies that are user-oriented and not technology-focused. The efficiency gains derived from the use of ICTs have the potential to benefit poor communities and improve their social and economic livelihood.

A further empirical study could be done to enhance the conceptual framework proposed in this paper for the adoption and diffusion of ICT to achieve poverty alleviation by SMEs in South Africa.

The findings of the study will benefit the government and non-government agencies that focus on the development of the SME sector to implement sustainable ICT initiatives in the best possible way in order to achieve the MDGs of poverty alleviation and acceleration of ICT usage.

The study will also inform and enable policy formulation, regulatory practice and business operations to produce positive growth and development outcomes. The empirical study builds on the work of other researchers who have made notable contributions to information technology diffusion, adoption and socio-economic development.

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