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ICT Usage in Small, Medium and Micro Enterprises: A South African Perspective Of its Role and Impact on Poverty Reduction

By

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Abstract

The role and impact of information and communications technologies (ICTs) towards enabling socio-economic development in small, medium and micro enterprises (SMMEs) has received attention from various scholars. South Africa as a lower middle-income developing country has a number of development priorities which include the urgent need to expand the economy and ultimately to eradicate poverty and unemployment. Based on evidence from more advanced economies, expanded access and usage of ICTs in SMMEs is considered an imperative to enable the acceleration of development goals.

This study sets out to advance understanding of the role and impact of ICT usage by SMMEs on poverty reduction from a South African perspective. A systematic literature review methodology was applied to analyse previous theoretical and empirical studies conducted on the interplay between ICTs, SMMEs and poverty reduction. Empirical data was gathered from SMMEs through semi structured interviews and observations. A purposively selected case study was also carried out serving to enhance contextual insight into the role of ICTs in an SMME context. The thematic analysis method, Actor-Network Theory (ANT) and Sustainable Livelihood framework (SL) were applied as the data analysis methods. The combination of ANT and the SL framework for expanded analysis has not been applied before by similar studies that examine the interplay between ICT, SMMEs and poverty reduction. The process of triangulation was applied on the empirical findings in order to reduce bias and to construct a conceptual model.

This study contributes to the body of knowledge by proposing a conceptual model that frames the role and impact of ICT usage by SMMEs towards improving their livelihoods and reducing poverty. Methodologically it offers an example of how method pluralism can be applied to gain a better understanding of the research phenomena. From a practical perspective, this study addresses real life challenges resulting in the suggestion of practical guidelines to ensure that the use of ICTs by SMMEs results in improvements in their financial and non-financial well-being. The findings of this study indicate that the relationship between ICT usage and poverty reduction is neither simple nor linear.

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Effective use of ICTs could result in SMMEs leveraging more benefits and thus improving their human capabilities as well as social and economic well-being resulting in poverty reduction.

Keywords: Information and communication technologies, poverty reduction, small, medium and micro enterprises.

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Declaration

I declare that the thesis titled: "**ICT Usage in Small, Medium and Micro Enterprises: A South African Perspective of its Role and Impact on Poverty Reduction"** is my own work and that all resources I have used have been indicated referenced and acknowledged. This work has not previously been submitted for a degree or examination at this or any other institution.

Busisiwe Benedicta Mbuyisa
March 2017

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Publications

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Dedication

In loving memory of my late parents

Mr S.P Mbuyisa and Mrs N.M Mbuyisa

This one is for you….

Thank you for believing in me and

for always inspiring me to pursue my dreams

Your kindness, love and teachings will forever be cherished

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Terms and Abbreviations

CIPC	: Companies and Intellectual Property Commission
DFID	: Department for International Development
DSBD	: Department of Small Business Development
DTI	: Department of Trade and Industry
et alia (et al.)	: Term meaning: and others
et cetera (etc.)	: Term meaning: and the others; and other things
FMCG	: Fast Moving Consumer Goods
GDP	: Gross Domestic Product
GEM	: Global Entrepreneurship Monitor
FMCG	: Fast moving Consumer Goods
ICT	: Information and Communications Technology
ICT4D	: Information and Communication Technology for Development
IDI	: Information Communication Technology Development Index
IS	: Information Systems
ITU	: International Telecommunication Union
LCC	: Least Connected Counties
LDC	: Least Developed Countries
NDDB	: National Dairy Development Board
NDP	: National Development Plan
NGP	: New Growth Path
NIBUS	: National Informal Business Upliftment Strategy
RDP	: Reconstruction and Development Programme
SA	: South Africa
SARS	: South African Revenue Services
SEDA	: Small Enterprise Development Agency
SMME	: Small, Medium and Micro Enterprises
SL	: Sustainable Livelihood Framework
TEA	: Total Entrepreneurial Activity
WSIS	: World Summit on the Information Society

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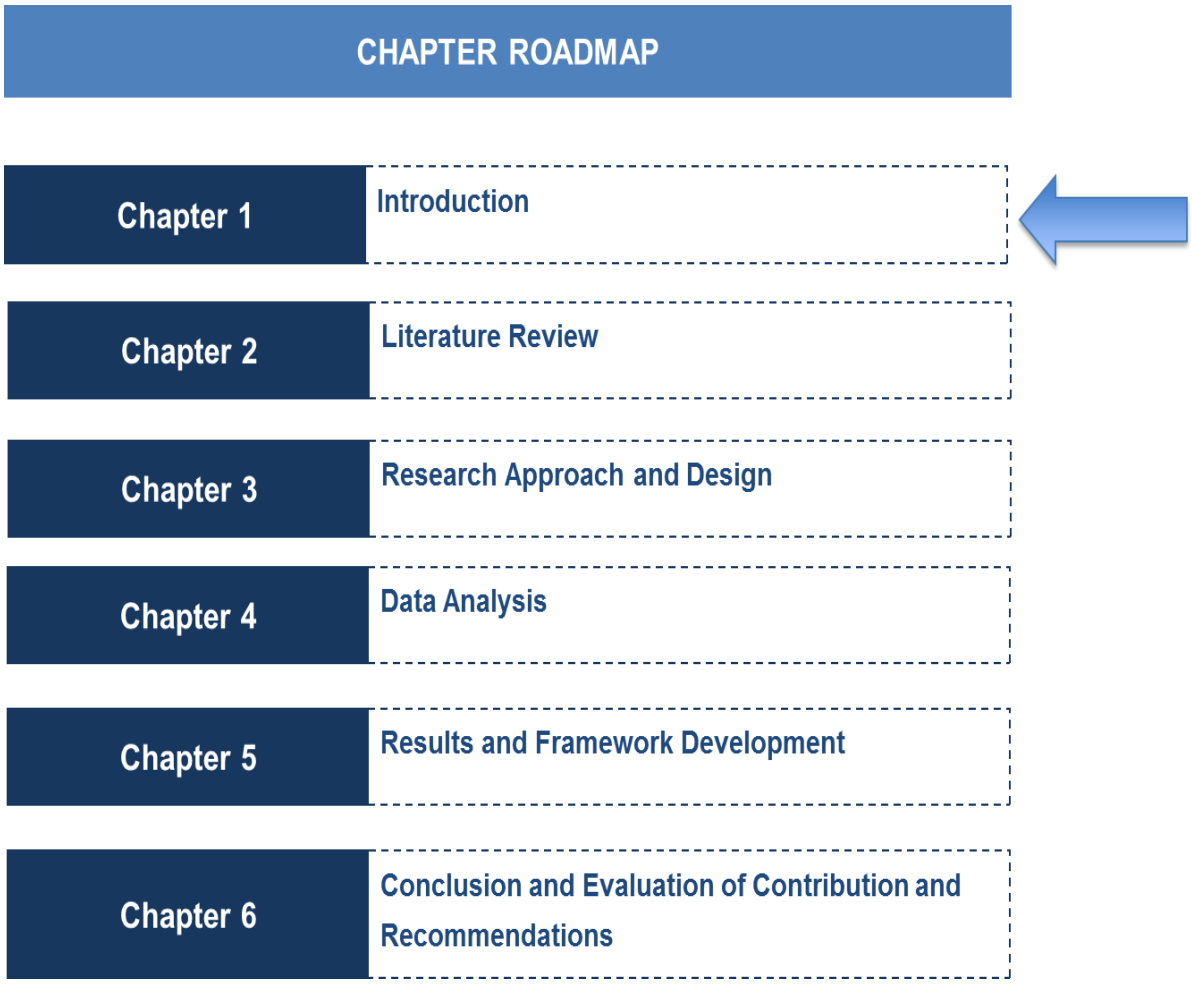

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1.1 Introduction

Information and Communications Technologies (ICTs) have been hailed by some as the solution for developing countries to leapfrog stages of development and enter directly into the information age. The digital opportunities provided by ICTs are fundamental to the improvement of all aspects of developing economies and their entry into the global marketplace (Chacko and Harris, 2006). However, others are more pessimistic, pointing to the growing digital divide that excludes some countries and regions unable to tap into the global marketplace, and makes the distance to those operating within the global network increasingly large (Adera et al., 2014).

ICTs refers to any artefact, technique, or knowledge used for capturing, storage, processing and dissemination of information (Duncombe and Heeks, 2002). ICTs include television, radio, telephones (fixed and mobile), fax, computers, and the Internet (Gester and Zimmermann, 2003; Marker et al., 2002). For the purposes of this study, the scope covers modern ICTs such as mobile phones, Internet and social media. The selection of these ICTs is due to their prevalence and accessibility (Esselaar et al., 2007; Marker et al., 2002).

The explosive growth of ICTs such as the Internet and mobile telephony, has raised expanding interest in understanding their role in enhancing the socio-economic potential of small, medium and micro enterprises (SMMEs). Consequently, a number of studies have been conducted on ICT use in SMMEs in various regions of the world including Asia Pacific (Heeks, 2002; Kotelnokov, 2007); Latin America (Botelho and da Silva Alves, 2007); India (Lal, 2007; Nielinger, 2003); Mozambique (Souter et al., 2005); Tanzania (Molony, 2005); South Africa (Ismail et al., 2011). These studies have found the use of telephony, especially mobile phones, to be popular among these enterprises and to have positive effects on performance (Adera et al., 2014).

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SMMEs, 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 SMMEs by making knowledge and information available, improving business-related communication, reducing costs, improving decision-making, responsiveness and efficiency, as well as improving overall flexibility (Torero and von Braun, 2006; Ashrafi and Mutraza, 2008; Schware, 2003; Chacko and Harris, 2006). A strong SMME sector that is connected to the global digital economy can lead to job creation, increased public revenue and a general rise in the standard of living.

In addition to the access availed by ICTs for SMMEs to participate in the knowledge economy, opportunity is also created to narrow social and economic inequalities and thus aid achievement of broader development goals (Chacko and Harris, 2006). There is a growing body of evidence on the importance of Small, Medium and Micro enterprises (SMMEs) for socio-economic growth in developing countries (Esselaar et al., 2007; Duncombe and Heeks, 2005; Kotelnokov 2007; Daniels, 1999; Thomas et al., 2004; Qureshi, 2005).

In their study Duncombe and Heeks (2005), argue that SMMEs have the ability to contribute towards poverty reduction. Their poverty reduction potential can result in income generation, diversified livelihood opportunities, more secure employment opportunities for the poor and provision of social benefits such as enhancement of skills, increased self-confidence, empowerment and security against income loss (Duncombe and Heeks, 2005). Nonetheless, SMMEs in developing countries have not been able to realise some of these benefits owing to constraints such as lack of financial resources, poor infrastructure, lack of business and ICT skills, unfavourable policies and legal frameworks (Ongori and Mingiro, 2010; Olawe and Garwe, 2010; Ismail et al., 2011). Challenges posed by rapid globalisation in the form of international competition and limited access to new markets have also hampered progress (Barba-Sanchez et al., 2007). If SMMEs in developing countries are unable to exploit the benefits of ICTs fully, they will be less able to compete with large firms in the global economy (Torero and von Braun, 2006).

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Evidence from theoretical and empirical studies has found that the benefits of ICTs are not automatic and the role of ICTs in poverty reduction among SMMEs is not clear (Adera et al., 2014). Adeya (2002) provides a review of the literature concerned with ICTs and poverty overall, in special sectors such as health and education and by gender. Adeya (2002) found that a number of the studies reviewed were more descriptive than analytical and there was an absence of a clear analysis showing the impact of ICT on poverty.

Another important overview of the relationship between ICTs and poverty is the study by Torero and von Braun (2006). The authors found that a variety of views about ICTs reveal that their role in development is unclear, especially without convincing evidence of their impact. Little research has been conducted on the direct and indirect links between ICT and poverty reduction. Although the relationship between ICTs and poverty has frequently been suggested, the mechanisms through which this link functions require further systematic interrogation, given the wider definition of poverty that has been suggested in recent literature (Adera et al., 2014).

The definition of poverty adopted by this study recognises the multidimensional approach of poverty based on the sustainable livelihoods (SL) framework (Scoones, 1998). The framework recognises that the poor have access to five assets of capital namely social, human, physical, financial and natural. These assets constitute the means with which the poor develop their livelihood strategies to reduce poverty (Adera et al., 2014). The use of ICTs can facilitate the linking of social, economic and natural well-being by improving communication and networking. ICTs can reduce exclusion through information processing and dissemination, reduce transaction costs and enhance social capital. Through ICTs, the poor are able to learn of new production strategies and technologies, access market information at a faster and more accurate level and keep in regular contact with peers and other social and economic contacts and associates (Adera et al., 2014).

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In South Africa, the formal and public sector have found it challenging to absorb the growing number of job seekers, hence there is increased focus on entrepreneurship and its potential for contributing to economic growth and job creation (Olawale and Garwe, 2010). Over the past two decades the SMME sector has played an increasingly important role in the development of South Africa's social and economic growth. The South African government has prioritized this sector due to its potential contribution towards poverty reduction, employment creation, economic empowerment and innovation (SA Department of Trade and Industry, 2003). It is estimated that SMMEs account for up to 99.3 percent of the privately owned enterprises in South Africa. According to Statistics SA, there are 428,540 formal and economically active SMMEs in the country. SMMEs currently contribute 35 percent to Gross Domestic Product (GDP). They also contribute 54 percent to formal private sector employment. Given the statistics, SMMEs play a pivotal role in resolving the country's development challenges (Statistics SA, 2015). According to the National Development Plan formulated in 2014, the South African Government aims to address income poverty by reducing the number of people living below the poverty line of R418 per person per month from the current 39 percent of the population to zero by 2030. Success in eradicating non-income poverty will be measured by the degree to which the lives and opportunities of the poorest South Africans are transformed in a sustainable manner (National Planning Commission, 2011).

There is no universally accepted definition of a small business; a number of definitions are used in various countries. In developed countries, entities with fewer than 500 employees are considered small to medium enterprises, whilst in developing countries the thresholds on the number of employees and turnover criteria per industry are generally lower (Fin and Disterer, 2006). Small businesses in South Africa are defined by The Small Business Act (1996) as comprising of micro, very small, small to medium enterprises (SMMEs).

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" (SA Department of Trade and Industry, 2008, p.2).

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SMMEs are not the same, their needs, capabilities and opportunities vary dramatically. Regardless of size, these enterprises have been evidenced to contribute to goals such as poverty reduction and job creation through economic growth and operations that are sustainable over time (Mead and Liedholm, 1998; Aremu and Adeyemi, 2011).

Micro enterprises are the smallest enterprises in the small business sector. They can be found in both the formal and informal economies. The informal economy refers to economic activities by workers and economic units that are not covered or are insufficiently covered by formal arrangements. Due to their size, they do not usually qualify for VAT registration and they have informal accounting and operation procedures. Sometimes the term 'survivalist' is used when referring to micro enterprises. These enterprises generate income that is less than the minimum income standard or poverty line. Economic activity for these enterprises is directed at providing minimal means to keep the unemployed and their families alive (SA Department of Trade and Industry, 2003; SA Department of Small Business Development, 2013). In developing countries micro enterprises are platforms for self-employment which serve as shock absorbers against extreme poverty with the potential to become steps up the ladder of economic advancement. Examples of survivalist enterprises include hawkers, vendors and subsistence farmers (SA Department of Trade and Industry, 2003; SA Department of Small Business Development, 2013).

The very small enterprises often operate in the formal economy and have access to modern technology. These enterprises employ between six and twenty employees. While the definition of micro-enterprises is determined by the number of employees and turnover per industry, various researchers have applied different thresholds on the number of people employed ranging from five, ten or higher number of hired workers (Donner, 2007; Duncombe and Heeks, 2002; Jagun et al., 2008). The definition of micro-enterprises used in this paper is adopted from the South African Integrated Small Business Development Strategy (2004-2014) document. This strategy combines micro and very small enterprises operating in the formal and informal economies. From an employment perspective the definition addresses the self-employed through to firms with a maximum of ten workers (SA Department of Trade and Industry, 2003).

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Small enterprises tend to be more established than micro and very small enterprises, their business operations tend to be more complex. Most often the enterprise has outgrown direct supervision by the entrepreneur, and has developed a secondary coordinating mechanism distinguishing it from a micro enterprise. Growth into a small enterprise requires an accumulation of resources as well as the appropriate incentives for enterprise expansion (SA Department of Trade and Industry, 2003). In employment terms, a small enterprise employs from eleven up to fifty paid employees (SA Department of Trade and Industry, 2003).

Medium sized enterprises employ up to a maximum of two hundred workers. Even though these enterprises are owner managed and controlled, the ownership and management structure is more complex. Often decentralization of power to an additional management layer, division of labour and functional differentiation are characteristics that distinguish between small and medium sized enterprises (SA Department of Trade and Industry, 2003). The National Small Business Act (NSBA), as revised by the National Small Business Amendment Bill of 2003, defines the thresholds for small businesses per industry as illustrated in Table 1.

Table 1: Small Business Schedule. Source: (The National Business Act of 116, as revised by the National Small Business Amendment Bill of March 2003)

Sector or sub-sector in accordance with the Standard Industrial Classification	Size of Class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Agriculture	Medium Small Very small Micro	100 50 10 5	R5m R3m R0.50m R0.20m	R5m R3m R0.50m R0.10m
Mining and Quarrying	Medium Small Very small Micro	200 50 20 5	R39m R10m R4m R0.20m	R23m R6m R2m R0.10m
Manufacturing	Medium	200	R51m	R19m

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Sector or sub-sector in accordance with the Standard Industrial Classification	Size of Class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
	Small Very small Micro	50 20 5	R13m R5m R0.20m	R5m R2m R0.10m
Electricity, Gas and Water	Medium Small Very small Micro	200 50 20 5	R51m R13m R5.10m R0.20m	R19m R5m R1.90m R0.10m
Construction	Medium Small Very small Micro	200 50 20 5	R26m R6m R3m R0.20m	R5m R1m R0.50m R0.10m
Retail and Motor Trade and Repair Services	Medium Small Very small Micro	200 50 20 5	R39m R19m R4m R0.2m	R6m R3m R0.60m R0.10m
Wholesale Trade, Commercial Agents and Allied Services	Medium Small Very small Micro	200 50 20 5	R64m R32m R6m R0.20m	R10m R5m R0.60m R0.10m
Catering, Accommodation and other Trade	Medium Small Very small Micro	200 50 20 5	R13m R6m R5.10m R0.20m	R3m R1m R1.90m R0.10m
Transport, Storage and Communications	Medium Small Very small Micro	200 50 20 5	R26m R13m R3m R0.20m	R6m R3m R0.6m R0.10m
Finance and Business Services	Medium Small	200 50	R26m R13m	R5m R3m

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Sector or sub-sector in accordance with the Standard Industrial Classification	Size of Class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
	Very small Micro	20 5	R3m R0.20m	R0.50m R0.10m
Community, Social and Personal Services	Medium Small Very small Micro	200 50 20 5	R13m R6m R1m R0.20m	R6m R3m R0.60m R0.10m

According to the 2010 Small Business Survey, the largest proportion of small business owners resided in Gauteng (23%). Eastern Cape is the second largest province as far as the number of small businesses is concerned (15%) followed by Kwazulu-Natal (14%), North West (13%), Limpopo (10%), Western Cape (8.1%), Free State (8%), Mpumalanga (7%) and the Northern Cape ranked last with a total of (3%) small business owners (Finmark Trust, 2010).

In South Africa there is a paucity of work on the relationship between SMME's and ICTs. Despite the important role that both play in socio-economic development, there has been little academic attention directed at deepening understanding (Duncombe and Heeks, 2002; Makoza and Chigona, 2012).

Studies conducted in developing countries have paid limited attention to ICT use in relation to micro-enterprises. Most of the studies focus on the impact of ICT use on small and medium enterprises (Makoza and Chigona, 2012). There is also a limited understanding on the nuances of the small business sector and its potential for development (SA Department of Trade and Industry, 2003). As a contribution, this study aims to investigate and reveal deeper insight into how the use of ICTs by the small business sector could contribute towards poverty reduction in South Africa.

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ICT usage in this study is defined as application of modern ICTs such as mobile phones, social media and the Internet by SMMEs. Therefore, the unit of analysis used is the small business sector comprising of small, medium and micro-enterprises from the formal and informal economies doing business in various industry sectors. The rationale for selecting SMMEs stems from their potential for poverty alleviation, income generation and job creation in developing economies (Liedholm, 2001; Nichter and Goldmark, 2005). Moreover, since a majority of the studies conducted on the relationship between ICT, small businesses and poverty reduction have often been based on fieldwork in rural settings (Duncombe and Heeks, 2002; Galperin 2005; Konstadakopulos 2005; Jansen, 2007; Tiwari, 2008; Soriano, 2007) this study will contribute to the body of knowledge by studying SMMEs in urban areas.

The thematic analysis method, Sustainable Livelihood (SL) framework and Actor-Network Theory (ANT) were used for analysing the data from the respondents. The SL framework and ANT were further used as an input towards defining the conceptual framework for this study. A number of scholars have used the SL framework to measure the role of ICTs on the SMMEs livelihoods and poverty reduction (Duncombe 2007; Makoza and Chigona, 2012; Adera et al., 2014). The SL framework is mostly applied on empirical studies analysing the role of ICTs on the livelihoods of small businesses and poor communities (Makoza and Chigona, 2012; Duncombe, 2007; Soriano, 2007).

This framework is applicable and recommended for studies dealing with poverty, as it encompasses a wider scope of poverty-related challenges and can be adapted to suit the research context (Makoza and Chigona, 2012; Heeks, 2010). The next section introduces the research problem and the objectives of this research study.

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1.2 Problem Description

The use of ICTs has transformed human experience, empowering individuals through access to markets, changing the relationship between citizens and those in authority and allowing communities to emerge in virtual worlds that span the globe. The potential of ICTs is significant, and still largely untapped in Africa. Less developed countries not only lack skilled labour and capital but also use these technologies less efficiently (National Planning Commission, 2011).

Many small businesses in South Africa are faced with market conditions that exclude them or that work in favour of large enterprises. Despite the existence of a solid policy framework and various support measures, the South African SMME sector remains vulnerable (George et al., 2016). Obstacles and challenges facing SMMEs have been found to differ based on their locations. Different pre-conditions towards success exist in established, well developed urban centres when compared with small towns, rural villages and remote areas (George et al., 2016; SA Department of Trade and Industry, 2003). Similarly, there are dramatic differences in the SMME business environment of modern city centres and upper income neighbourhoods when compared with low income township areas and informal settlements most of which have little if any business facilities (SA Department of Trade and Industry, 2003). The barriers impeding small business development and growth relate to the economic challenges experienced in South Africa such as high unemployment, which since 2000 has fluctuated between 25% and 30% and has failed to show any significant decline despite continued attempts by the Government to stimulate economic growth.

The unemployment statistics as at the end of the third quarter in 2015 were reported at 25,5%, the rate increased by 0,5% which amounts to 188000 more unemployed persons compared to the second quarter of 2015 (Statistics SA, 2015). One major barrier that was raised by informal businesses is the attitude by the Government and big businesses towards it, that it is being seen as a nuisance and not a significant contributor to the economy despite a contribution of almost R42 billion to SA's GDP (SA Department of Small Business Development, 2013).

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In South Africa the majority of small businesses comprise of survivalist micro-enterprises (Fatoki, 2014). The 1995 White Paper referrs to many of the micro enterprises as survivalists because people are unable to find jobs or get into the economic sector of their choice. Income generated from the survivalist micro-enterprises often falls short of even a minimum income standard with limited capital invested and virtually no skills training in their particular field. Based on this analysis it was concluded that survivalist enterprises had only limited opportunities for growth into viable businesses. While there are many enterprises of a survivalist nature in South Africa, it has become clear that it is not possible to determine the future of these small enterprises. The Integrated Strategy of Small Business Development (2004-2014) therefore recognized the micro-enterprise sector as an important category of small businesses that deserves special attention (SA Department of Trade and Industry, 2003).

The National Informal Business Upliftment Strategy (NIBUS) acknowledges that in South Africa, the nature of the SMME sector has not been appropriately documented, together with its economic contribution not being properly calculated and recorded. This makes it difficult to measure its potential (SA Department of Small Business Development, 2013). Lack of information on the small business sector has led the South African government to use a broad blanket approach when dealing with the various enterprises in the sector. As a result, the understanding is broad and reflects a skewed picture of the environment (SA Department of Small Business Development, 2013).

In South Africa critical data about the SMME sector is not centrally located and its accuracy is often questioned. This has resulted in inconsistencies in the number of small businesses that exist in South Africa. The paucity of the data on the SMMEs sector is acknowledged in the National Development Plan (NDP) as an issue that requires special attention and needs to be addressed (National Planning Commission, 2011). According to the Global Entrepreneurship Report, nine out of ten SMME businesses fail in the first year of operation (Global Entrepreneurship Monitor, 2014). Having reliable data regarding SMMEs is critical as; it helps not only in tracking the failures and risks associated with SMMEs in each sector, but also in measuring the country's strengths.

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This will further help in channelling efforts and resources in those sectors where SMMEs are likely to survive, thus minimising risks associated with SMME development (SA Department of Telecommunications and Postal Services, 2015).

1.2.1 Previous research and its shortcomings

Previous research has indicated that ideas, theories and perspectives pertaining to the understanding of ICT use in SMMEs is conceptually focused, lacks empirically rigorous data, widely generalised, and reflects the views of the West (Ramsey et al., 2003; Mira, 2006; Tsui-Auch, 2003; Martin and Matlay, 2001; Fallon and Maron, 2000; Shiels et al., 2003). Studies conducted to provide empirical evidence on the relationship between ICT access, economic growth and poverty reduction have tended to adopt a broad macro-level approach and to focus on money metric indicators, such as gross domestic product (GDP). There have also been methodological inadequacies, as has been pointed out by several reviewers of such research (Adeya, 2002; Mukhopadhyay, 2004). As a result, the nature of the relationship between ICTs and poverty remains unclear and the information deficiencies raise concerns among policy makers, who are being urged to increase investments into ICT infrastructure and regulatory frameworks. To resolve this, evidence is needed to attribute and measure changes in the level of poverty following implementation of ICT initiatives that specifically target the poor (Adera et al., 2014).

Mukhorpardhyay (2004) reviews a number of publications that have expressed scepticism about the role of ICT in reducing poverty. The data points to the fact that experiences with several ICT projects designed to assist the underprivileged indicate that new technology has been harnessed to address poverty alleviation for many years now. She argues that the differences in the role of ICT in poverty reduction are grounded in the fact that there is no comprehensive and universally accepted conceptual framework for assessing the relationship between ICTs and their impact on poverty reduction. Other reviews of ICT projects designed to bring about economic development and poverty reduction concur and argue that since few of these projects have carried out a systematic impact assessment, the results are not conclusive about the relationship of ICT with poverty reduction (Batchelor and Scott, 2005).

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Duncombe and Heeks (2002) state that despite the importance of the socio-economic development role played by the SMMEs and ICTs little work has been conducted on their intersection to analyse the role of ICTS on the sector. Montealegre (1999) argues that the existing literature is on actions and behaviours and that there is a dearth of underlying theory to explain ICT transfer to developing countries. Most of today's research consists of "techno-centric" approach studies which make technology the starting point instead of information (Chiware and Dick, 2008, p.149). The use of ICTs by SMMEs plays a major role in the fight against poverty (Chiware and Dick, 2008). It is difficult to measure the utility of ICTs in developing countries due to the absence of empirical work that shows the connection between ICTs and socio-economic development (Akpan, 2003). Empirical work needs to be conducted on the socio-economic benefits of ICTs in developing countries (Boateng et al., 2008).

1.2.2 Summary of the Problem

The arguments above raise the following key points on the role of ICT use by SMMEs and the impact on poverty reduction:

- There is limited evidence that links ICT use to its development impact such as poverty reduction, the majority of studies focus on the economic benefits such as economic growth, productivity and profitability benefits realised from ICT use (Batchelor and Scott, 2005; Harris, 2004; Wolf, 2001).
- Limited work has been conducted on the relationship between SMMEs and ICTs despite the important role that they both play in socio-economic development (Duncombe and Heeks, 2002).
- There remain many gaps, in terms of how ICT and poverty are conceptualized and measured, as well as how their interaction and impact are assessed.
- The literature on ICT use and poverty reduction focuses on the supply side being technology introduction, and less on the demand side which focuses on understanding the needs of the poor and how their livelihoods can be improved by using ICTs (Tiwari, 2008).

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- The majority of studies in developing countries examining the impact of ICT use focus on small and medium enterprises than on micro enterprises (Makoza and Chigona, 2012).
- There is limited understanding of the nuances in the micro-enterprise sector despite the high prevalence of these enterprises in the South African economy.
- Small businesses are not the same. They have different needs, capacities and opportunities. These businesses contribute to the goals of growth, equity, job creation, improved livelihoods and poverty reduction in different ways. Strategies and tools used towards enabling them must be tailored based on the business category and environment in which they operate (SA Department of Trade and Industry, 2003).

1.3 Motivation for the Research Project

The focus of this study looks at how ICT usage by SMMEs could enable poverty reduction from a South African perspective. The legacy left behind by the political history of South Africa created inequalities which ultimately resulted in a dual economy structure (Berry and Clarke, 2002). On the one hand, the first economy is developed, integrated to the global supply chain and uses advanced technologies. On the other hand, the second economy remains largely under-developed, and communities in the economy experience inequalities and limited opportunities (Ligthelm, 2006). President Thabo Mbeki coined the term second economy to describe the informal sector (Denvey et al., 2006) and to point out the structural barriers to participation in the formal economy that are faced by some South Africans. The second economy is seen as structurally disconnected from the mainstream economy. The second economy is also defined as the space within which those who are marginalized operate (Kirsten, 2006).

As part of the attempts to redress the historically-based inequalities, the South African government has implemented numerous interventions to grow microenterprises from the second economy to the first economy (Makoza and Chigona, 2012; SA Small Business Development, 2013).

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Amongst others the Department of Small Enterprise Development developed the National Informal Business Upliftment Strategy aimed at unleashing the potential and innovative ideas of the informal business sector to broaden economic participation and encourage inclusive growth of the historically marginalised in townships and rural areas. The ultimate objectives of the strategies are to address the issues of poverty, unemployment and inequality by creating opportunities for the poorest of the poor to improve their livelihoods (SA Department of Small Business Development, 2013).

Duncombe and Heeks (2002), emphasise the importance of understanding the specific needs and contexts of particular enterprises. Understanding micro-enterprises in developing countries entails understanding that the majority of them are survivalists or trundlers that provide poverty line and sub-poverty line income for entrepreneurs who lack essential resources. Survivalists are mostly informal businesses run by those who have no choice but to take up the income generating activity because they have no other source of livelihood (Duncombe and Heeks, 2002).

“Trundlers are those where enterprise turnover is roughly static and whose entrepreneurs show no great desire or no great capacity to expand. Income provided will be enough to meet basic needs” (Duncombe and Heeks, 2002, p62). Micro-entrepreneurs have particular characteristics that are not well recognised from a business perspective. Such characteristics include multiple occupations, family and other ties that are inseparable from income generating activities, risk aversion, patron client relations that constrain choices and behaviours (Briggs et al., 1988).

The needs of the micro-entrepreneurs are often aimed at improving social welfare that reduces vulnerabilities. Quite often Western models are imposed on these entrepreneurs without understanding their contexts. The same applies with the application of ICTs, unless the social and cultural realities of the poor are recognised, and unless the role of the micro-entrepreneurs is understood a lot of investment in time, money and energy will be lost (Duncombe and Heeks, 2002). Singh (2010) adds that ICTs are regarded as a tool to aid development; the intention of the tools must not be confused with the goals of development.

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The impact of ICT will be determined by the context in which the technologies are deployed, preparedness of the users, and opportunities that exist in their application. Better policies, improved implementation, availability of ICT literacy resources and stringent regulation are required for an ICT sector that promotes development (May et al., 2011).

According to a study conducted in Uganda by Okello-Obura and Manishi-Majaja (2010), micro-enterprises 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. With the South African economy experiencing a stagnant growth rate, hopes of attaining the five percent target by 2019 seems to be gradually fading. The ICT sector in counties such as Korea, Japan, Singapore and Hong Kong has shown that ICTs can be the critical lever to jump-start the economy and propel it to rapid growth (SA Department of Telecommunications and Postal Services, 2015).

Some years ago there were debates on whether ICTs were relevant to developing countries. These debates have been resolved in the affirmative such that the question has now become not whether, but how ICTs can benefit development (Walsham et al., 2007). A number of studies have been conducted on the use of ICTs for development. Some of these studies include establishing a link between ICTs and economic growth (Kraemer and Dedrick, 2001; Jalava and Pohjola, 2002) as well as how ICTs can be used for building human capacity for poverty reduction (Urquahart et al., 2008). A strong correlation has been established between access to education, knowledge and poverty indicators such as infant mortality, family size and women's health (Marker et al., 2002). Other studies have also established a close link between poverty and information gaps experienced by the poor (Humphrey, 2006). Madon (2000) examined the use of the Internet in sectors such as health and education and domains such as economic productivity and sustainable development. Silva and Figueroa (2002) explored how to promote the use of ICT in the context of a developing country by studying Chile. They developed a framework for understanding the role of specific institutional players involved in the use of ICTs for development.

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These players include the private sector companies, government authorities and other agencies such as trade industry associations and educational bodies. Most of these studies dealt with the contribution of ICTs to development, taking a wide perspective of a particular technology or a whole country. Although the link between ICT and economic growth has been well established, the exact process on how ICTs can be used for poverty reduction in developing countries needs further exploration (Kenny, 2002).

There are few theoretical and empirical explanations on how ICTs can assist in achieving sustainable poverty reduction from a developing country perspective (Urquahart et al., 2008; Harris, 2004; Obayelu et al., 2006; Schwarz, 2010; World Bank, 2001; Cecchini and Scott, 2003). The World Bank Report (2001) proposes a strategy for attacking poverty through ICTs in three ways: promoting opportunity, facilitating empowerment and enhancing security. Cecchini and Scott (2003) used the Wold Bank strategy for poverty reduction to illustrate how ICTs can alleviate poverty in developing countries by using case studies from India. The study found that the use of ICTs by Indian farmers and artisans helped to connect then to markets and increased their income (Cecchini and Scott, 2003).

Other studies have used the sustainable livelihood framework to illustrate the benefits derived by micro-enterprises from the use of ICTs (Duncombe, 2007; Makoza and Chigona, 2012). The theoretical study of Duncombe (2007), indicates that the use of ICTs alone can lead to marginal direct benefits in terms of poverty reduction. Physical access to ICT does not translate to usage and a favourable impact on users (Soriano, 2007). ICTs should be used as a tool to support broader development goals aimed at targeting poverty (Batchelor and Scott, 2005). The information society report (2004, p3) states that: “ICTs should be regarded as tools and not as an end in themselves. Under favourable conditions, these technologies can be powerful instruments, increasing productivity, generating economic growth, job creation and employability and improving the quality of life for all. They can also promote dialogue among people, nations and civilisation” (WSIS, 2004).

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1.4 Research Objective and Questions

Limited research has been conducted on the use of ICTs by the small business sector in South Africa and therefore there is insufficient research evidence on the types of ICTs they use, the reasons for using the technologies and the role of those technologies on their livelihoods and ultimately on poverty reduction. Considering the critical role of the small business sector, it is important to explore means that will improve its sustainability and growth. Therefore, this study aims to examine the interaction between small businesses and ICTs and how this relates to poverty reduction. To achieve this overarching objective, it is important to understand the environment and constraints within which small businesses in South Africa operate; interrogate what ICT interventions are directed to them and how appropriate these are in servicing their needs and ultimately determine the impact on economic and social advancement.

The main research objective is to explore how ICT usage by SMMEs can enable poverty reduction in South Africa.

This objective is transformed into the **main research question** for this project:

- How can ICT usage by SMMEs contribute towards poverty reduction from a South African perspective?

The secondary research questions for this study are:

- **Secondary research question 1:** Which ICTs do South African SMMEs use?
- **Secondary research question 2:** Why do South African SMMEs use ICTs?
- **Secondary research question 3:** What are the barriers of ICT usage experienced by SMMEs in South Africa?
- **Secondary research question 4:** What are the benefits of ICT usage experienced by SMMEs in South Africa?
- **Secondary research question 5:** How can existing models be used as input for constructing a conceptual framework that will enable poverty reduction by SMMEs in South Africa?

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1.5 Expected Contribution

It is expected that the research study will contribute to the existing body of knowledge in the following ways:

- The study builds on the body of knowledge consisting of work by other researchers who have examined the role and impact of ICTs in enabling poverty reduction.
- The conceptual framework constructed in this study will inform policy formulation, regulatory practice and business operations to produce positive development outcomes through the employment of ICTs by SMMEs.

1.6 Research Limitations and Exclusions

The following research limitations were identified:

- The majority of research participants were based in the Gauteng province. A single enquiry was conducted with participants from the Western Cape Province.
- Due to the geographical location of the researcher, the study participants were located in urban settings. SMMEs from rural areas were excluded from the study.
- The sample population for this study only included the owners of small, medium and micro enterprises. Other stakeholders who form part of the SMME eco-system such as employees, customers, suppliers and government were not included.

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1.7 Thesis Structure

The thesis structure is as follows:

Chapter 1: **Research Introduction:** This Chapter presents an introduction to the research project, with a specific focus on the research problem, research objectives and the research questions.

Chapter 2: Literature Review: This Chapter examines pertinent literature on key themes relating to the interplay between ICTs, SMMEs and poverty reduction. This Chapter further identifies the research gaps on the literature studies reviewed.

Chapter 3: Research Design and Approach: This Chapter presents the philosophical theoretical foundation of this study. The research applied an interpretivist perspective to assist in gaining a better understanding of the research phenomena. Additionally, this Chapter outlines the research methodology employed in the research and the rationale for using the chosen methodology with regards to the paradigm and approach.

Chapter 4: Data Analysis: All the primary data gathered from various SMMEs that participated in this study is discussed and analysed in this Chapter using the selected data analysis tools.

Chapter 5: Results and Framework Development: The findings of the study and how they relate to the research questions are presented in this Chapter. The conceptual framework is defined and evaluated in this Chapter.

Chapter 6: Conclusion and Evaluation of Contribution: Finally, this Chapter concludes the study by reflecting on how the study contributes to advancing understanding of the relevant phenomena. It also evaluates the unique contributions made, acknowledges limitations and proposes opportunities for future research.

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The thesis roadmap is illustrated in Figure1. This roadmap is presented at the beginning of each Chapter on this report.

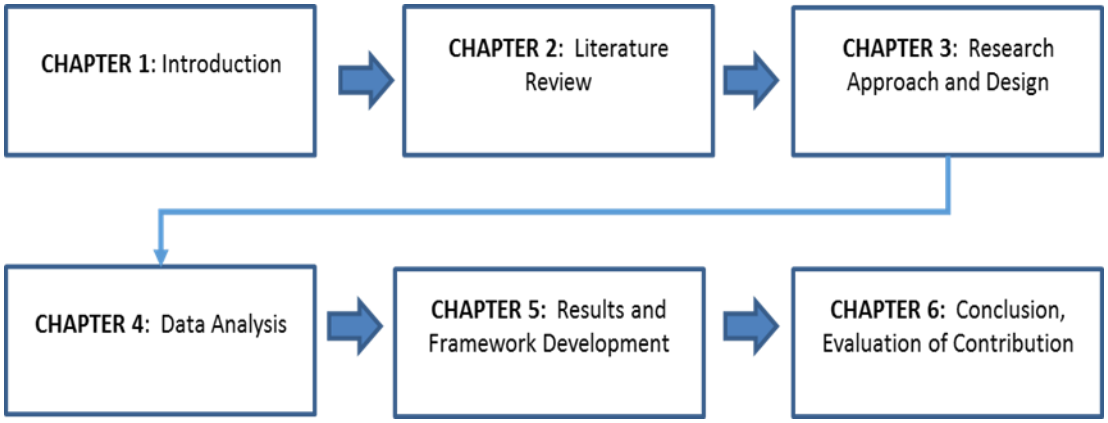

Figure 1 : Thesis Roadmap

1.8 Concluding Summary

This Chapter introduces a discussion on the role of SMMEs and the benefits of ICTs in enabling these businesses to improve their operations and fight against poverty. The interaction between ICTs and SMMEs indicates that ICT usage by SMMEs increases productivity, income generation and efficiency of internal business operations and connects SMMEs more easily and cheaply to external contacts locally or globally. The usage of ICTs is not an easy process for SMMEs, compared to larger firms that have the capacity to absorb costs and the flexibility to restructure their business operations quickly. SMMEs in South Africa experience a number of barriers relating to ICT usage and growth thus they require special attention and support.

A multidimensional view of tackling poverty by SMMEs using ICTs requires the formulation of strategies and involvement from various stakeholders to ensure long term sustainability of the initiatives. Limited empirical studies have been conducted on the relationship between ICTs, SMMEs and poverty reduction in South Africa. This study aims to contribute to the body of knowledge by providing empirical evidence on the role and impact of ICT use by the SMME sector in the fight against poverty in South Africa.

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The next Chapter elaborates on the literature reviewed in this research project based on theoretical and empirical studies conducted on the relationship between ICTs, SMMEs and poverty reduction. The Systematic literature review methodology was used to analyse previous literature focusing on the research phenomena.

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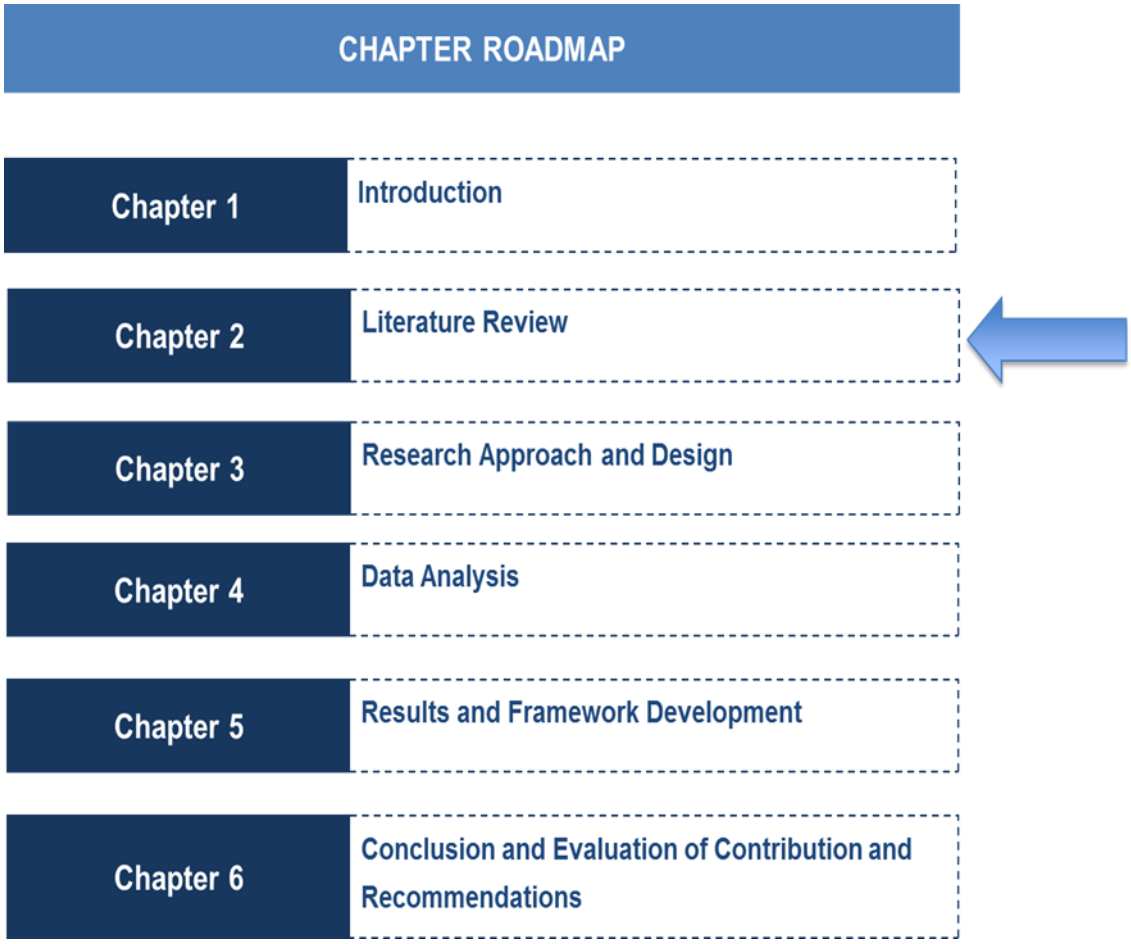
Chapter 2: Literature Review



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2.1 Introduction

This Chapter reviews the literature on the relationship between ICT, SMMEs and poverty reduction by looking at two dimensions. The first dimension looks at the role of ICT use in SMMEs while the second investigates how the use of ICTs by SMMEs can enable poverty reduction. A systematic literature review methodology was applied to analyse the literature in the study. Such structured approach to examining scholarly attention to the relationship between ICT usage by SMMEs and poverty reduction has not been undertaken by the similar studies that were investigated by the researcher. This Chapter begins with a context setting section that discusses the systematic literature review methodology. The second section explores ICT usage by SMMEs and the role of ICTs in SMMEs by looking at key drivers, benefits and challenges experienced by SMMEs. Section three discusses the relationship between ICT usage by SMMEs and poverty reduction. The fourth section looks at the research gaps and then the final section presents the summary for this Chapter.

2.2 Systematic literature review methodology

A review of past literature is an important endeavour for academic research (Webster and Watson, 2002). Literature reviews provides an overview, synthesis and critical assessment of previous research, challenge existing knowledge and enable the construction of research problems and promising research questions (LePine and Wilcox-King, 2010; Alvesson and Sandberg, 2011). There are several approaches and guidelines for conducting literature reviews in Information Systems (IS) (Webster and Watson, 2002; Levy and Ellis, 2006; Schwarz et al., 2007; Bandara et al., 2011; Wolfswinkel et al., 2013). In their work Webster and Watson (2002) suggest the use of a topic-centric approach for presenting, classifying and assessing relevant literature. Bandara et al. (2011) propose the use of thematic analysis and qualitative research software for analysing the body of literature in the IS shared service environment. Wolfswinkel et al. (2013) recommend the use of grounded theory for conducting and presenting literature reviews.

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While providing insightful approaches and guidelines for developing and constructing literature reviews, these papers do not pay attention to the role of literature search processes and their importance in conducting literature reviews (Boell and Cecez-Kecmanovic, 2015).

The importance of literature searches is addressed by the systematic literature review approach. Okoli and Schabram (2010), define systematic literature review as follows:
"a systematic, explicit, comprehensive and reproducible method of identifying, evaluating and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners" (Okoli and Schabram, 2010, p1). The distinctive feature of such approach is the establishment of a protocol that describes how to identify, select, assess and synthesize evidence from the literature. By adhering to such a protocol, systematic literature reviews are acclaimed to provide a standardised method for reviewing literature that is replicable, transparent, objective, unbiased and rigorous (Atkin and Louw, 2000; Okoli and Schabram, 2010; Oates et al., 2012).

Systematic literature reviews are thus proposed as superior alternatives to narrative or traditional literature reviews (Hjorland, 2011). The traditional literature review approaches are assumed to be unsystematic, biased, non-replicable, unscientific and non-rigorous (MacLure, 2005; Morell, 2008). On the contrary however, other scholars argue that there is no single best way of looking at literature and for conducting literature reviews. A diversity of views and outcomes of literature reviews are desirable and important for scholarly arguments and constructive debates (Schwarz at al., 2007).

The systematic literature review approach was initially proposed to IS by Atkins and Louw (2000). Over the years, there has been a notable increase in the references to systematic literature reviews within the IS discipline (Boell and Cecez-Kecmanovic, 2015). "Being systematic enables critical assessment of knowledge on a particular topic in order to demonstrate weaknesses and inadequacies in the current body of knowledge. Being systematic provides the depth of insight into a body of literature that will allow the production of competent, original and critical reviews" (Boell and Cecez-Kecmanovic, 2015, p171).

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Accordingly, the systematic literature review methodology was used in this study to analyse previously published literature on the interplay between ICTs, SMMEs and poverty reduction. Bandara et al. (2011) states that fast evolution in the field of IS raises the need for a structured and efficient approach when conducting research, the use of a systematic literature review presents researchers with a tool to conduct quality research studies efficiently.

The systematic literature review method followed in this study as presented in Figure 2 applies a multi phased approach of planning, selection, extraction and execution. The guide below is tailored to IS research (Okoli and Schabram, 2010).

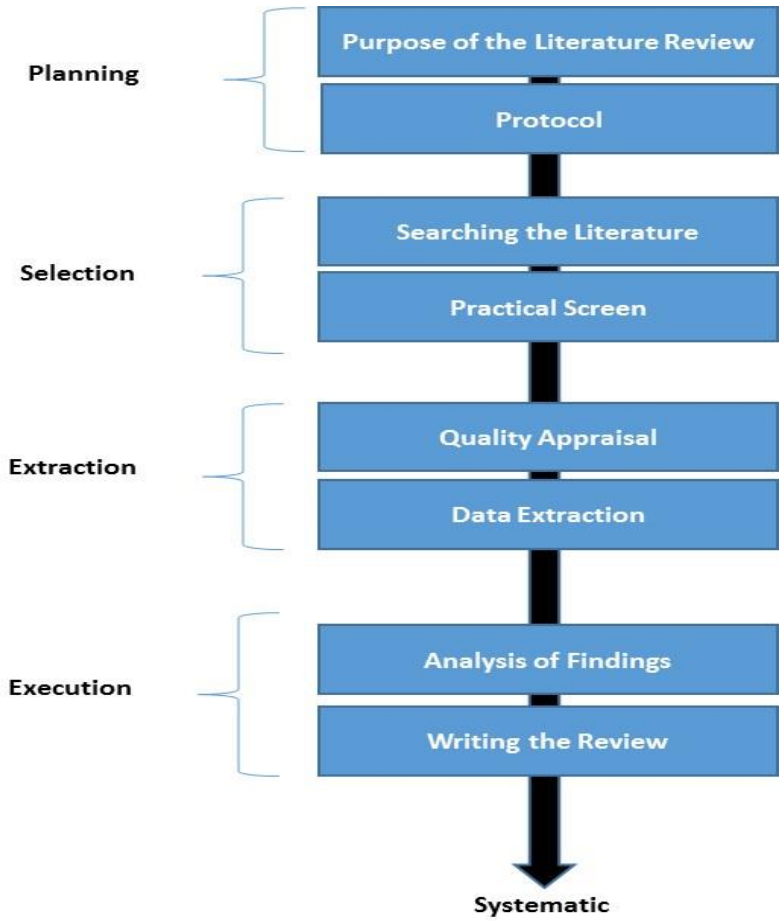

Figure 2: A Systematic guide to literature review development. Source: Adapted from Okoli and Schabram (2010)

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2.2.1 Planning

The planning of the literature review requires the researcher to clearly identify the purpose and intended goals of the review (Okoli and Schabram, 2010). The planning phase serves to guide the author towards formulating a clear research question (Tranfield et al. 2003). According to Counsell (1997), "a good systematic review is based on a well formulated, answerable question. The question guides the review by defining which studies will be included, what the search strategy to identify the relevant primary studies should be, and which data needs to be extracted from each study" (Counsell, 1997, p380).

A comprehensive review of literature in the field of IS requires two main criteria to be identified and clarified namely, the sources (Webster and Watson, 2002) and the search strategy (Levy and Ellis, 2006). The sources refer to the outlets that will be targeted to gather the relevant literature. The search strategy determines the terms that the researcher will look for and use during the search (Bandara et al., 2011).

The research protocol defines the plan and steps to be followed when conducting the literature review. The protocol defined during the planning phase is guided by the research questions and purpose of the review (Okoli and Schabram, 2010).

The intention of this review was two twofold being firstly

- To examine the relevant literature relating to the key elements of the study on the relationship between ICT usage by SMMEs and poverty reduction
- Secondly, to identify key themes and gaps in the literature.

`

2.2.2 Selection

The selection phase entails searching for the studies that will be included in the review and eliminating the studies that do not meet the requirements (Okoli and Schabram, 2010). In an effort to produce a systematic and detailed review the researcher employed the logical search process developed by Tranfield et al. (2003) and presented here in Figure 3. Keywords were identified by breaking up the review questions into implicit and explicit components. This process resulted in five key words being identified namely SMME, ICT, poverty reduction, socio-economic growth, development and livelihoods. These words were then used to source relevant literature across a variety of disciplines including management, entrepreneurship, development, informatics and information management.

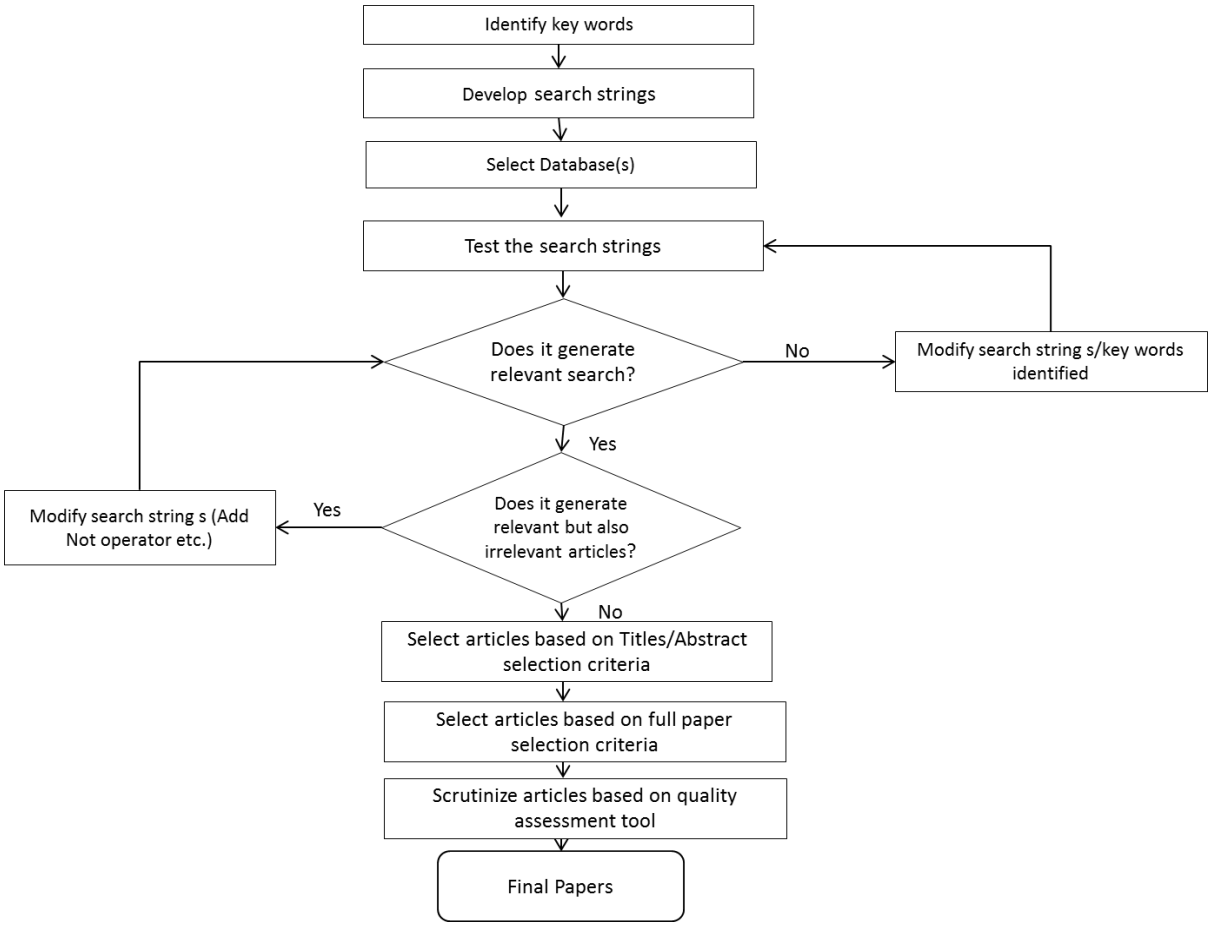

Figure 3: Literature Search Process, Source: Tranfield et al. (2003)

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Search strings were generated using the keywords resulting in the consolidation of a list of articles that were "both wide enough to recall a sufficient quantity of references and precise enough in the light of information explosion to eliminate unnecessary material" (Duff, 1996, p15). The selected keywords (Table 2) were then used to construct search strings with Boolean connectors (AND, OR). The search strings were tested on scholarly databases and search engines such as Google Scholar, EBSCO, Emerald and ProQuest. If the search strings generated a relevant search, the articles were tested against the established criteria. If the search strings produced both relevant and irrelevant articles, the irrelevant articles were filtered by modifying the search strings to include operators such as "NOT".

Table 2: Keywords and search terms. (Source: Habib et al., 2015)

Search String	Rationale
String 1 (SMME* OR small business* OR entrepre* OR entrepreneurship*) AND (ICT*) AND (economic growth* economic benefits OR efficiency* OR productivity OR profitability)	Identifies the role of ICT use on the SMMEs
String 2 (SMME* OR small business* OR entrepre* OR Entrepreneurship* AND (ICT*) AND (impact*) AND (pro-poor growth* development economic growth* OR livelihoods* OR poverty reduction*)	Identifies the impact of ICT use by SMMEs on poverty reduction

Fink (2005), states that the researcher should be explicit about the criteria upon which studies can be excluded from consideration. After filtering, the articles relevant for this study were screened using the criteria outlined in Table 3.

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Table 3: Screening criteria. Source: Adapted from Fink (2005)

Criteria	Decision	Rationale
Relevance to the review question	Should be relevant	Addresses the review question
Date of publication	No limit	There is no reason to impose time restrictions
Geographic location	No limit	The study focuses on developing countries; however, studies from developed countries were not excluded in order to gain insights on what makes them succeed.
Types of publications	Peer-reviewed journals, books and working papers	The review includes both peer-reviewed working journals and working papers. Working papers will ensure coverage of the most current research.
Industry	All	The review includes various industry sectors.
Nature of research	Theoretical and empirical	Theoretical and empirical studies informed the review
Research Methodology	Qualitative and quantitative	Both qualitative and quantitative studies were used in the review
Publication Language	English	Language capability of the researcher

2.2.3 Extraction

Once the relevant papers had passed the selection criteria, they were screened for quality according to the quality appraisal protocol in Table 5. Each selected paper was assigned a quality score for each criterion and only papers that were rated as at least a 3 on all the criteria were selected. The quality scoring was as follows: 1. Criteria not met at all; 2. Criteria attained to a limited extent; 3. Acceptable level attained; 4. Significant level of alignment; 5. Criteria fully attained. Different quality parameters were defined for theoretical versus empirical papers, as these two types of papers served different purposes and used different methodologies. Their limitations and findings were different as well (Huff, 1999).

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Table 4: Quality appraisal protocol. (Source: Huff, 1999)

	Theoretical/Conceptual Papers						
Criteria Code	Quality Criteria	Quality Scores					
		1	2	3	4	5	
A	Is the relevant theoretical background linking to the model(s) clearly discussed and stated?						
B	Are all the underlying assumptions regarding the conceptual framework and the models explicitly stated?						
C	Are all the relevant factors/variables of all the equations/models clearly stated?						
D	Are all the necessary proofs and discussion of the results and theorems discussed clearly?						
E	Are all the relevant limitations of the conceptual framework and/or the models clearly stated?						
F	Are all the findings of the study explicitly stated and warranted?						

	Empirical Papers						
Criteria Code	Quality Criteria	Quality Scores					
		1	2	3	4	5	
A	Is the empirical work aligned with existing theory/ies or empirical work(s)?						
B	Is the methodology clearly and explicitly explained?						
C	Are the limitations and advantages of the methodology clearly stated?						
D	Is the sample set clearly stated?						
E	Are all the data sources explicitly stated?						
F	Are all the variables clearly defined and explained?						
G	Are the limitation(s) of the equations/models stated?						
H	Is the time-frame of sample set explicitly mentioned?						
I	Is the data collection method clearly mentioned?						
J	Are further research areas discussed?						

Once a particular paper had passed all the quality assessment criteria, it was imported into citation management software, Mendeley. The relevant data was then extracted from the selected articles in the data extraction form, so as to construct logical and critical arguments. This process was applied to all the selected papers in order to construct a coherent synthesis (Dixon-Woods et al., 2006). The information extracted from the final selected papers was used to construct a logical and coherent synthesis with a three-dimensional purpose: i) to provide a clear description of the reviewed literature, ii) to state the research gaps and iii) to provide a logical argument that would justify the subsequent research study.

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Figure 4 shows the distribution of the core articles used in this research based on the journals that published the studies.

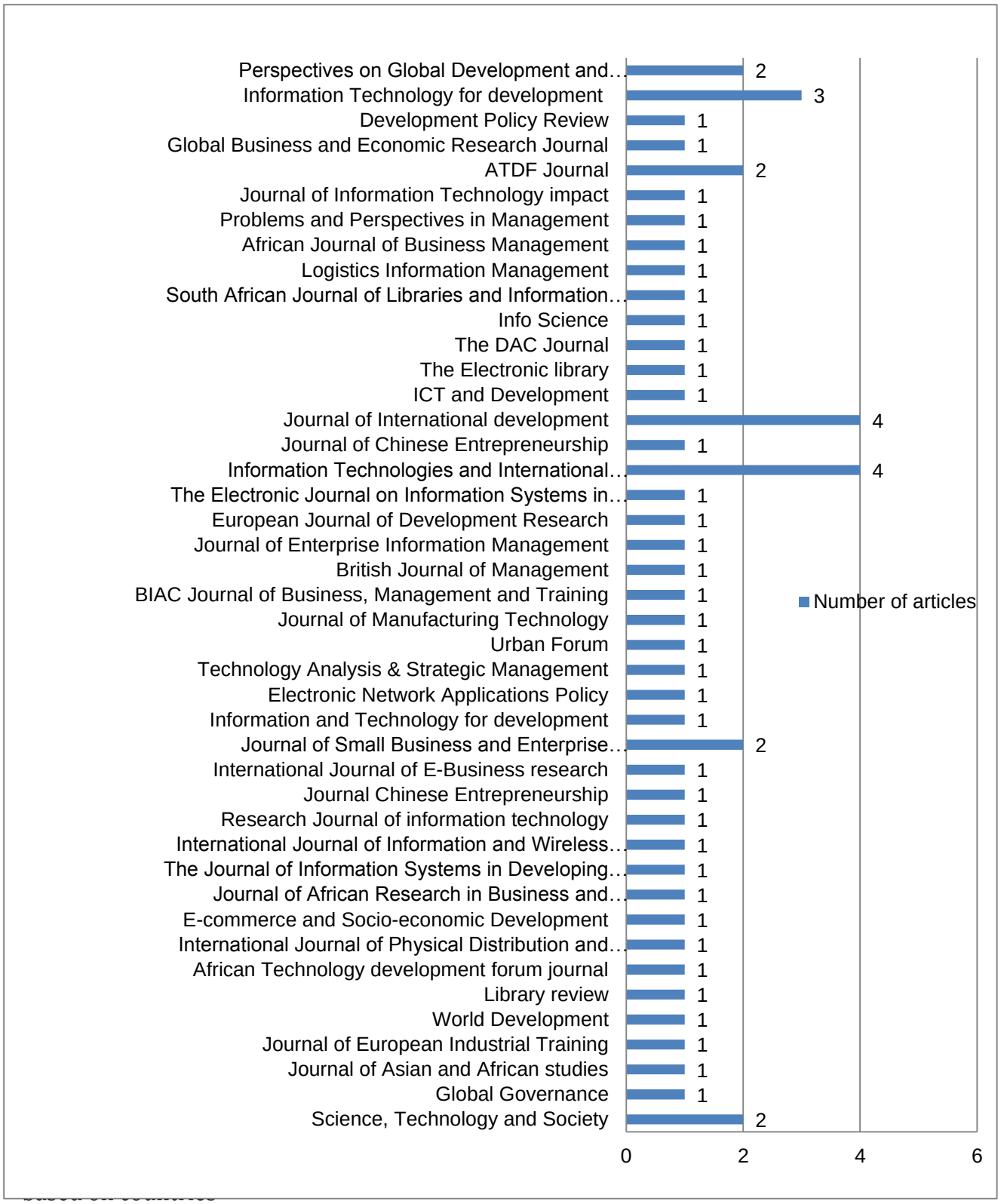

Figure 4: Distribution of core articles. Source (compiled by the author)

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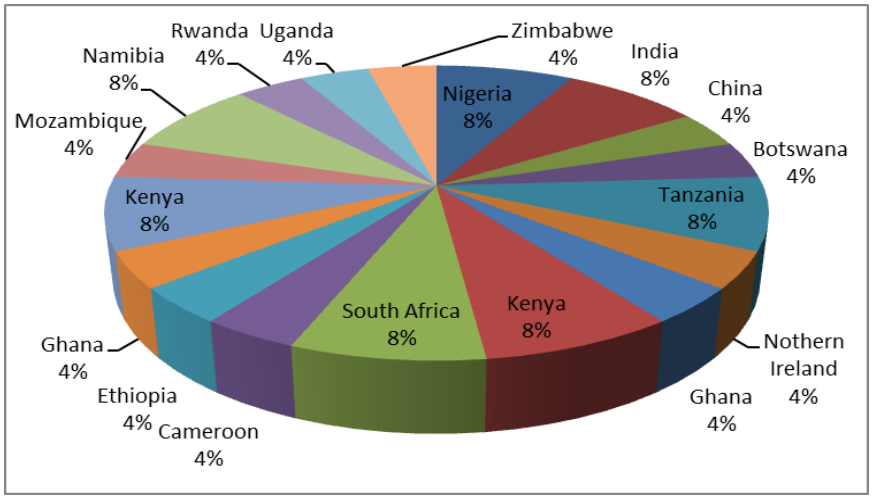

Figure 5: Distribution of studies based on countries. Source (compiled by the author)

As shown in Figure 6 majority of the core papers (56%) were empirical studies and the remaining 44% were theoretical studies.

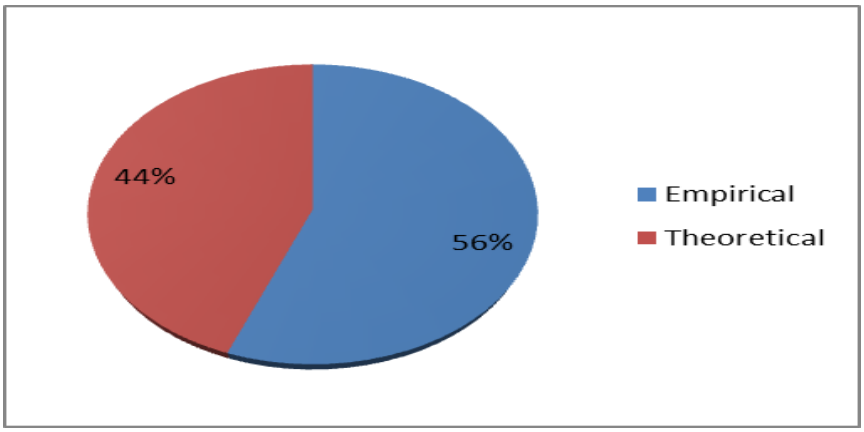

Figure 6: Distribution of the studies based on research categories

The next section discusses the findings based on the theoretical and empirical studies that were reviewed in the literature.

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2.2.4 Analysis of Findings

Over the years a number of theoretical and empirical studies have been conducted on ICT usage by SMMEs, addressing various areas such as ICT adoption rates (Frempong, 2008; Migiro, 2006; Chiware and Dick, 2008). Other studies analysed the benefits of ICT adoption and use (Barba-Sanchez et al., 2007; Wolf, 2001; Ojukwu, 2006; Frempong, 2007; Esselaar et al., 2007; Gester and Zimmerman, 2003). The barriers to ICT adoption and use were explored by Barba-Sanchez et al., 2007; Wolf, 2001; Ojukwu, 2006; Frempong, 2007; Esselaar et al., 2007 and Gester and Zimmerman, 2003. The contribution of ICT to poverty reduction and economic growth is covered in publications by Harris et al. (2008), Soriano (2007), Cecchini and Scott (2003), Harris (2004), Heeks (2010), Moodley (2005), Batchelor and Scott (2005) and Pigato (2001). The studies of Soriano (2007), Duncombe (2007) and Makoza and Chigona (2012) explored the impact of ICT use on the livelihoods of rural households, small and micro-enterprises. The literature review is drawn from key issues that various authors aimed to examine on the role and impact of ICT usage by SMMEs on poverty reduction. From the review of literature key issues, related research questions and the studies that raised them, were identified and grouped in Table 5.

Table 5: Key themes on ICT usage by SMMEs and poverty reduction. Source (Compiled by author)

Key Issues	Related Research Questions	Author
ICT adoption and use by SMMEs: The key determinants, benefits, barriers and strategies to address the barriers.	What is the role of ICTs on SMMEs?	Duncombe and Heeks (2002); Duncombe and Heeks (2005)
	What are the benefits of ICT usage for SMMEs?	Wolf (2001); Barba-Sanchez et al., (2007); Ojukwu, 2006; Frempong (2007); Esselaar et al., (2007); Gester and Zimmerman (2003); Ongori and Migiro (2009)

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Key Issues	Related Research Questions	Author
	What are the barriers of ICT usage experienced by SMMEs?	Ismail, Jeffery and Van Belle (2011); Kiveu and Ofafa (2013); Ongori and Migiro (2009); Barba-Sanchez et al., (2007)
	How can ICT adoption barriers be minimised?	Wolcott et al., (2008)
	To what extent do SMMEs have access and use of ICTs?	Migiro (2006); Chiware and Dick (2008)
	How can SMMEs use ICTs to facilitate their economic activities?	Jagun, Heeks and Whalley (2008); Ismail, Jeffery and Van Belle (2011); Lal (2007)
ICT use and poverty reduction: The role of ICT use on poverty reduction.	How does the use of ICT affect the livelihood of microenterprises/ poor communities?	Soriano (2007); Tiwari (2008); Duncombe (2007); Makoza and Chigona (2012).
	How do ICTs contribute to development?	Qureshi (2005); Harris (2004); Weiner and Rumiany (2007; Heeks (2010)
	How can ICTs contribute to poverty reduction?	Batchelor and Scott (2005); Cecchini and Scott (2003); Kenny (2003)
	What is the role of mobile phones on economic development and entrepreneurial opportunities for SMMEs?	Melchioly and Saebo (2010); Jagun et al., (2008).

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Key Issues	Related Research Questions	Author
	How can ICTs contribute to socio-economic development?	Heeks et al., (2008); Jagun, Heeks and Whalley (2008); Gester and Zimmerman (2003);

2.3 The importance of SMMEs

SMMEs play an important role in economies all over the world by creating jobs and contributing to socio-economic development of their communities through job creation, income generation and distribution (Wolcott et al. 2008; Temtime and Pansiri, 2006; Machaha, 2002). In Mexico and Thailand approximately 97% of the firms are SMMEs and in the United States over 96% of firms have fewer than 50 employees (Kotelnikov, 2007). The rapid transformation of countries such as India, Malaysia, Indonesia, Taiwan and Hong-Kong is proof that SMMEs are major catalysts in economic development (Ojukwu, 2006). In India SMMEs have constantly been outperforming large organisations on parameters such as growth in production and employment. Consequently, the sector accounts for 40% of industrial production, 35% of total exports and 80% of employment in the industrial sector (Sharma and Bhagwat, 2006). In the African continent SMMEs are a major source of job creation, they are reported to employ more than 40% of new entrants to the labour market (Muuka, 2002).

2.3.1 The SMME Landscape in South Africa

South Africa generates almost a quarter of Africa's Gross Domestic Product (GDP) and boasts the 18th largest stock exchange in the world. However, it also evidences the world's highest Gini coefficient and widespread unemployment (Omidyar Network, 2013). Poverty, joblessness and low level of skills demand a response that will drive inclusive growth and development. The acute problem of high unemployment suggest that young people are not acquiring the kinds of skills and experience required to drive the economy forward. This inhibits entrepreneurship and the successful establishment of business activity; ultimately affecting economic development and the ability for South Africa to transition more readily to a developed world economy (Golberg et al., 2014).

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South African is lagging behind other developing countries in the area of entrepreneurship, and has experienced a marked decrease in entrepreneurial activity in recent years. The 2014 Global Entrepreneurship Monitor (GEM) states that South Africa's total entrepreneurial activity (TEA) rate decreased from 9.1% in 2011 to 7.3% in 2012. Though this rose to 10.6% in 2013, it is still significantly below the average of countries with a similar economic development level, which average at a TEA of 14.4% (Golberg et al., 2014).

More critically the GEM 2014 report found that South Africa's established business rate of 2.9% is the fourth lowest in the world (Amoros and Bosma, 2014). In addition to South Africa's low levels of entrepreneurship, the country ranks 41st in terms of ease of doing business (The World Bank, 2014). South Africa's business environment is fraught with unsupportive and disabling legislation, which favours large businesses and hinders access to affordable capital for SMMEs (Bergh, 2013).

Growth in the "missing middle" of the South African SMME ecosystem is widely acknowledged a critical priority in government and a focus for both the New Growth Path (NGP) and the National Development Plan (NDP). According to the NDP, "90% of jobs will be created in small and expanding firms" and "regulatory reform will boost mass entrepreneurship" (National Planning Commission, 2011). The NDP outlines a vision and potential policy response designed to facilitate the target of 6% unemployment by 2030. Job creation is a necessity if South Africa seeks to reach a high-growth trajectory. SMMEs, are thus a crucial source of this growth as contributors of job creation and economic prosperity (Golberg et al., 2014).

The South African government has committed to supporting the SMME sector as a growth engine and stabilizer for the economy. Over the past 20 years a number of efforts have been put in place to create a regulatory framework that supports this critical sector. Historically the NSBA provided the regulatory framework and reference point for SMMEs in South Africa as outlined in the 1995 White Paper on National Strategy for the Development and Promotion of Small Business in South Africa (Republic of South Africa, 1995).

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The NSBA was intended to provide for the establishment of the National Small Business Council and the Ntsika Enterprise Promotion Agency. In addition, it was aimed to provide guidelines for organs of state in order to promote small businesses in South Africa. The NSBA was amended in 2004, agencies such as the Ntsika Enterprise development Agency and the National Manufacturing Advisory Centre were replaced by the Small Enterprise Development Agency (SEDA) to accelerate the growth of small businesses.

In 2005, the Department of Trade and Industry (DTI) published the Integrated Small-Enterprise Strategy building plan based on the 1995 White Paper, presenting the way forward for small business development in South Africa for the period 2005 to 2014. The objective of the strategy was to address the government's special development goals to improve equity in terms of race, gender and geographical location (Republic of South Africa, 2005).

In 2012, the NDP was adopted as the strategic framework for South Africa's new growth trajectory. The NDP encourages efforts that are focused on attacking poverty and expanding a robust entrepreneurial and innovative economy (National Planning Commission, 2011). In support of realising the vision of the NDP, a number of supportive frameworks and policies were developed such as the New Growth Path Framework (NGP). The NGP is intended to stimulate discussions between the private sector, labour and government aimed at addressing the country's employment and economic challenges (Republic of South Africa, 2011).

The 2014 budget speech made by the South African Minister of Finance reiterated government's commitment to partnership and the "social compact to reduce poverty and inequality and raised employment and investment". The budget speech further indicates that in order to make rapid progress in creating jobs and reducing poverty, the country needs an economic growth rate of at least 5% per annum. The small business sector was seen as strongly linked to employment creation and an enabler of the aspired growth rate (Republic of South Africa, 2014).

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In 2014, South Africa had a newly created Department of Small Business Development (DSBD). The mandate of the DSBD is to represent and address the challenges faced by SMMEs in South Africa (Golberg et al., 2014). The discussion thus far outlines the landscape of the small business sector in South Africa.

The South African government recognises the critical role played by SMMEs, this is evident from their commitment and support of this sector. The success of SMMEs in South Africa in the coming decades will be strongly dependent on innovation and policy changes that shape a more supportive and enabling environment for growth (Golberg et al., 2014).

2.4 SMMEs and ICT Usage

Duncombe and Heeks (2005) categorise SMMEs into two, namely livelihood and growth enterprises. Livelihood enterprises consist of micro-enterprises; they are established by the poor as an alternative way to earn income. Growth enterprises consist of small and medium businesses aimed at yielding the long-term benefits of competitiveness and innovation. Most livelihood enterprises do not have direct access to digital ICTs, whereas growth enterprises have greater ICT needs for growth and are already using ICTs as part of their business processes (Duncombe and Heeks, 2005).

The use of ICTs by SMMES is explored by a number of other authors, including case studies conducted by Shiels et al. (2003) on 24 SMMEs in Northern Ireland. This study found that the characteristics of a firm and industry sector contributed to the extent of adoption and exploitation of ICTs by SMMEs to support business processes. The findings of another empirical study conducted by Frempong (2007) on 280 SMMEs in Ghana indicated that the extent and type of ICT used by SMMEs in Ghana was linked to the formality of the enterprise. Mobile phones were extensively used by SMMEs in the informal category, while other services, such as the Internet, were used by those in the formal category owing to commercial considerations such as the cost of investment and potential returns on business activities.

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The results of a study conducted by Esselaar et al. (2007) on SMMEs in 13 African countries (including South Africa) on ICT usage stated that mobile phones have overtaken computers as tools in supporting the running of SMMEs, given their prevalence and accessibility. The focus on mobile technologies by SMMEs is both an advantage and a disadvantage. It is an advantage because it provides the SMMEs with a low cost base and the ability to communicate easily with suppliers and customers. The disadvantages that technology poses to SMMEs are its limited functionality; inability to develop at the same pace as the SMME, as well as the associated high usage cost (Esselaar et al., 2007). Melchioly and Saebo (2010) analysed the use of mobile phones in 15 SMMEs from different industry sectors in Tanzania. Mobile phones improved the economic efficiency of SMMEs by improving their financial transactions, wealth generation and distribution (Melchioly and Saebo, 2010).

An empirical study conducted by Duncombe and Heeks (2002) analysed the role of ICTs on small and micro-enterprises in rural Botswana. The findings of the study revealed the use of the telephone as the technology-related priority for the entrepreneurs, followed by radio, television and newspapers. The lowest technological priority identified by the study was access to email and the web, because of their high cost of access, which most micro-entrepreneurs find difficult to afford (Duncombe and Heeks, 2002). A theoretical study conducted by Kenny (2002) indicates that the cost-effectiveness of ICTs differs between developed and developing counties. The study further state that the low income of the poor in developing countries makes the use of the Internet a financially disadvantageous method of communication, radio and telephone are more suitable and cost-effective technologies for the poor.

Chiware and Dick (2008) analysed the utilisation of ICTs by Namibian SMMEs between 2005 and 2007. This study indicates a low level of ICT utilisation by SMMEs in Namibia. The SMMEs do not use the latest technologies, such as the Internet, because of high costs, poor connection speed and lack of awareness of the technologies (Chiware and Dick 2008).

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The findings of an empirical study conducted on South African SMMEs indicates that SMMEs invest in general-use ICTs as opposed to new computerised methods, because SMME owners lack knowledge and awareness of the available technologies (Ismail et al., 2011). In cases where SMMEs cannot afford to acquire ICTs, public or communal ICT facilities such as telecentres, Internet cafes, public phones and libraries are used (Duncombe, 2007; Makoza and Chigona, 2012).

2.4.1 The role of ICT usage in SMMEs

Research that has been conducted on the role of ICTs among individuals and business entities has defined three roles of ICTs, namely automate, informate and transform (Tarafdar et al., 2012). Automate looks at ICT as a means for automating repetitive, structured and high-volume information processing. The automate role increases the speed and accuracy of information processing and reduces the costs of processing between buyers and sellers (Tarafdar et al., 2012).

The implementation of ICT at milk collection centres owned by the national dairy board in India provides a good illustration of the automate role of ICTs. The board comprised 100 000 village dairy cooperatives that collected milk from rural farmers. Traditionally, manual milk collection processes were used, which were time-consuming, inaccurate and prone to malpractice and underpayment (Tarafdar et al., 2012).

The implementation of a computerised milk collection system saved time for the farmers and introduced efficiencies into the process. The system enabled the dairy board to forecast milk collection, track seasonal variation and provide price-related information (Tarafdar et al., 2012).

According to this example, the automate role of ICTs primarily improves the mechanism to facilitate transactions. It does so by enabling faster and more efficient execution of processes, such as transfer of goods and services, transfer of payments and quality control (Tarafdar et al., 2012).

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It also enables more accurate communication between the SMMEs and buyers (Tarafdar et al., 2012). In their informate role, ICTs provide access to valuable, timely and accurate information to buyers and sellers.

In developing countries, telecentres are used as information or knowledge centres that provide access to details on products and services and possible selling prices. In the town of Janmitra in rural India, farmers use the telecentres to access information on the prices of grains and other commodities in international markets so that they can determine the prices at which to sell their produce (Gorla, 2009). The informate role of ICT also enables the matching of buyers and sellers. The Nemmadi telecentre project in India has proven to be successful in matching buyers and sellers. The solution was a business-to-consumer platform that enabled SMMEs to sell insurance, travel and mobile phone services to consumers (Gorla, 2009).

Fishermen at sea in the Indian state of Kerala use mobile phones to get in touch with potential buyers to assess demand and determine prices at which to sell (Jensen, 2007). The informate role of ICT enables the SMMEs to find potential buyers and determine prices and enables buyers to determine the availability of products (Tarafdar et al., 2012).

The transformational role of ICTs looks at fundamentally redefining processes and relationships within an organisation or between organisations by facilitating new forms of information transfer. A good example of this role of ICT is that of process reengineering in the microfinance sector in India. Field loan officers of microfinance organisations use smart cards and Internet-based remote access loan management applications to get the loans for SMMEs approved quickly (Cecchini, 2003).

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2.4.1.1 ICT Usage: Global Perspective

This section presents empirical findings from global studies that examined ICT usage in various economies including South Africa. This includes work conducted by Kemp (2016) on 30 key economies on the usage of modern digital ICTs such as PC's, tablets, mobile phones, Internet and social media. The findings of the (ITU) International Telecommunication Union (2015) study depicting the latest developments in ICTs across 167 ITU member states are also outlined.

Substantial growth in ICT use particularly mobile phones and the Internet has been evident since 2005. This period has seen a significant increase in the availability and use of broadband networks and services (ITU, 2015). Estimates on global changes in the coverage of mobile networks, the number of mobile cellular phones, fixed and mobile broadband subscriptions and individuals that use the Internet and household access are illustrated in Figure 7.

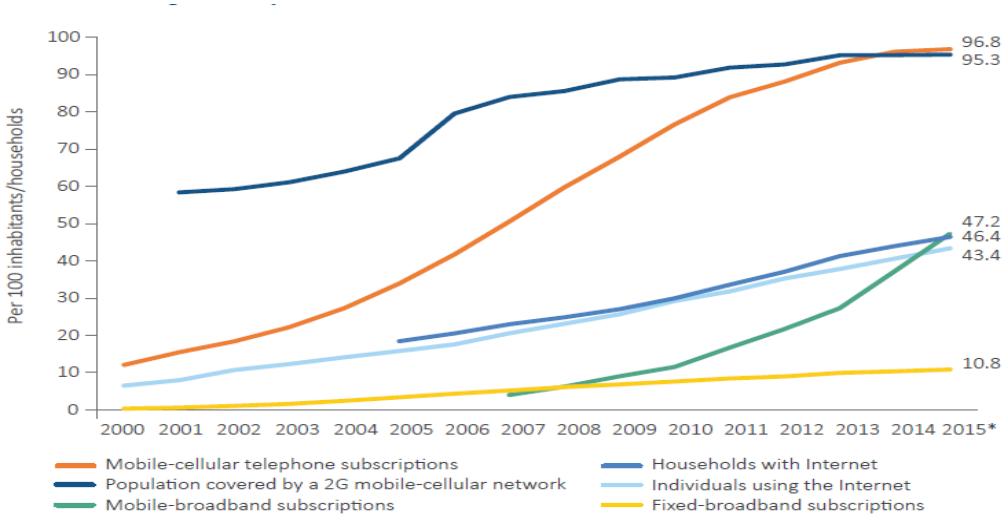

Figure 7: Internet access. Source (ITU, 2015)

One of the key contributions of the ITU (2015) report is the Information Technology Development index (IDI) for all the participating countries. The IDI index measures ICT access, ICT use and ICT skills across the world community including economies with high levels of ICT performance to the Least connected Countries (LCC) which are still seeking to progress from basic access to ICT intensity and impact.

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The findings of the global study indicate that the African continent has the lowest IDI performance levels compared to other regions. The country that ranks the highest is Mauritius with IDI above the global average. Four countries in the region i.e. Mauritius, Sychelles, South Africa and Cape Verde ranked in the top 100 of the 167 countries or exceeded the developing country IDI in 2015 (ITU, 2015). Figure 8 shows the IDI 2015 data for the African region.

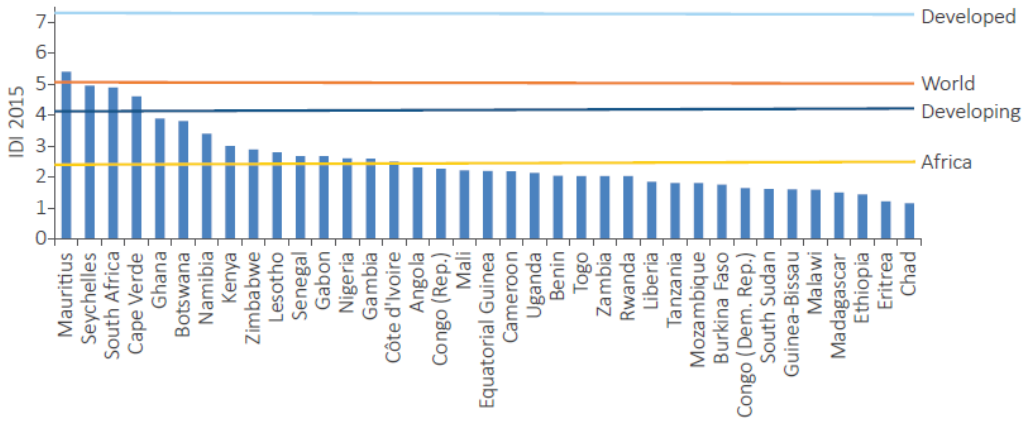

Figure 8: Information Technology Development Index (IDI) 2015 data for the African region. Source (ITU, 2015)

2.4.1.2 Internet Use

ITU (2015) suggests that 43% of the global population are Internet users. It further estimates that 3G coverage reaches 69% of the world population (ITU, 2015). Growth in Internet penetration in the African continent was also noted by Kemp (2016), however the region still lags behind others around the world at 29% which is below global average of 46% as depicted in Figure 9.

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Figure 9: Regional Internet Penetration. Source: (Kemp, 2016)

In South Africa, Internet penetration is low (49%) compared to other countries (refer to Figure 10 below). The main reasons that impact local Internet penetration are high cost of access and slow speed of the service (Kemp, 2016).

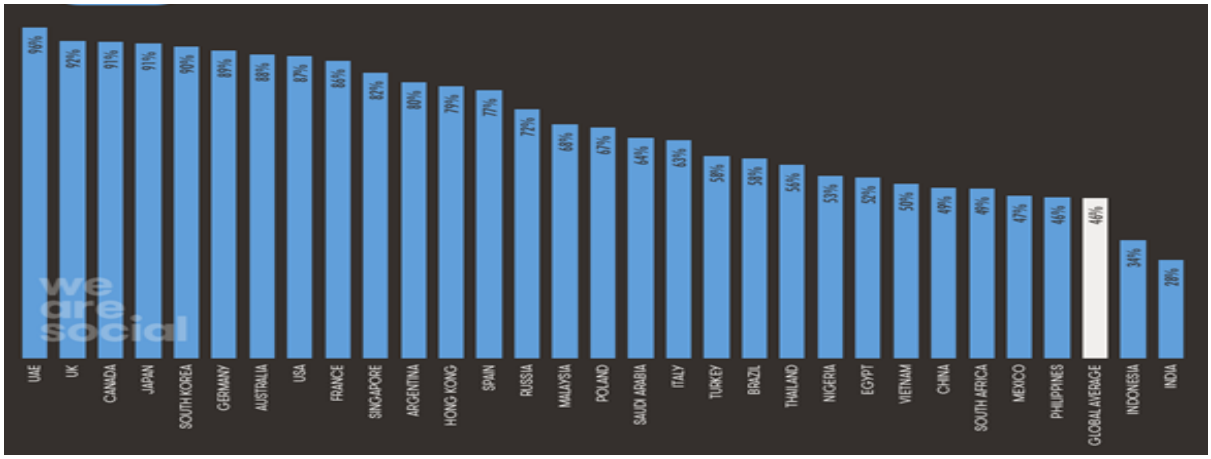

Figure 10: Internet Use by Country. Source: (Kemp, 2016)

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Globally, while most web access is via laptops and desktops (56%), mobile access is growing rapidly and accounts for 39% of all web pages served to web browsers. Web access using tablets is reported to be only 5% (Kemp, 2016). Figure 11 depicts the breakdown of Internet access per device.

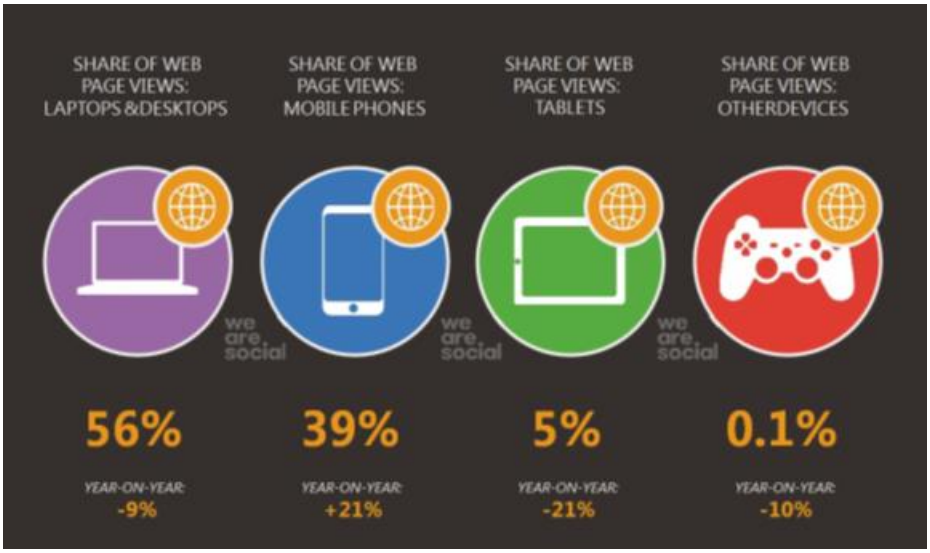

Figure 11: Share of World Traffic by device. Source: (Kemp, 2016)

Nigeria has the highest mobile share of web traffic with more than 80% of all web pages served in Africa's most populous nation going to mobile phones. South Africa is second on the list of the key thirty economies that participated in this study with 75% mobile traffic. On the other hand, only 12% of Russia's web traffic goes to mobile phones, this figure is three times less than the global average (Kemp, 2016). Figure 12 below shows the mobile share of web traffic per country.

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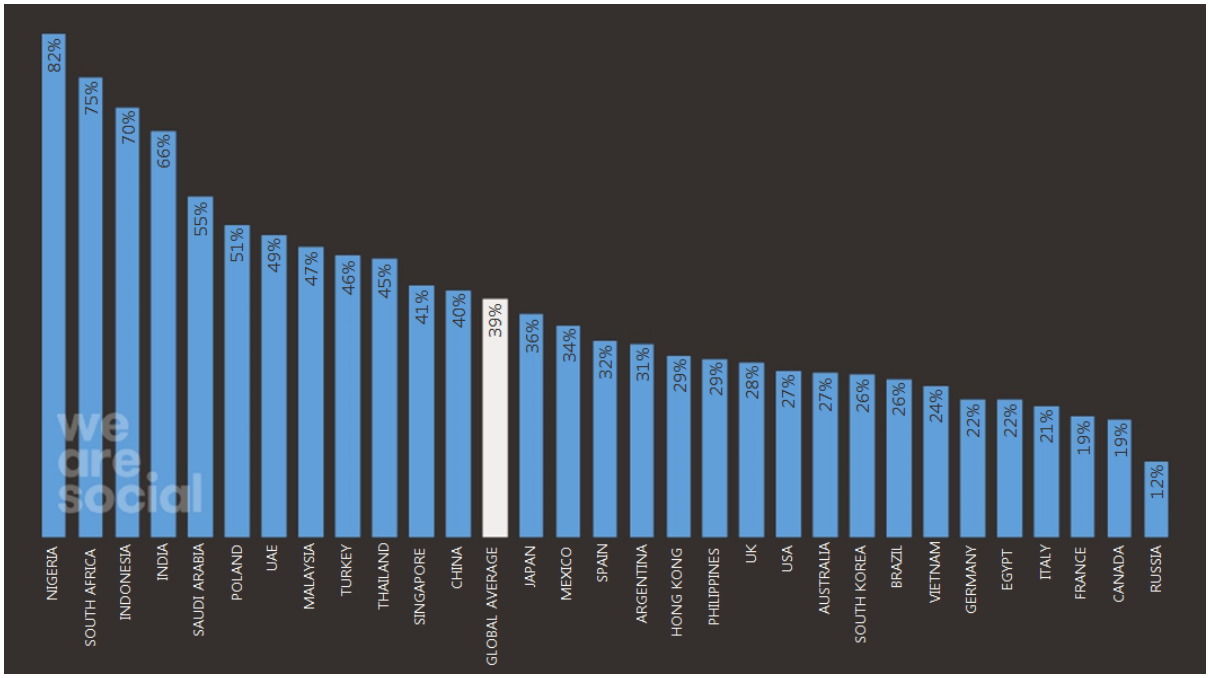

Figure 12: Mobile Share of Web Traffic. Source: (Kemp, 2016)

2.4.1.3 Social Media Use

Approximately one-third of the world's population is reported to be using social media. The number of reported users around the world has increased by 10% since January 2015. In South Africa, 24% of the population has access to social media networks. This compares to a Global average of 31%. While this still remains low (24%) by comparison to other countries, those who do have access spend significantly more time on social media (2.7 hours per day) compared to countries such as India (2,3 hours), US (1.7 hours), China (1.5 hours), and Japan (0.3 hours) (Kemp, 2016). Figure 13 shows the social media usage by country.

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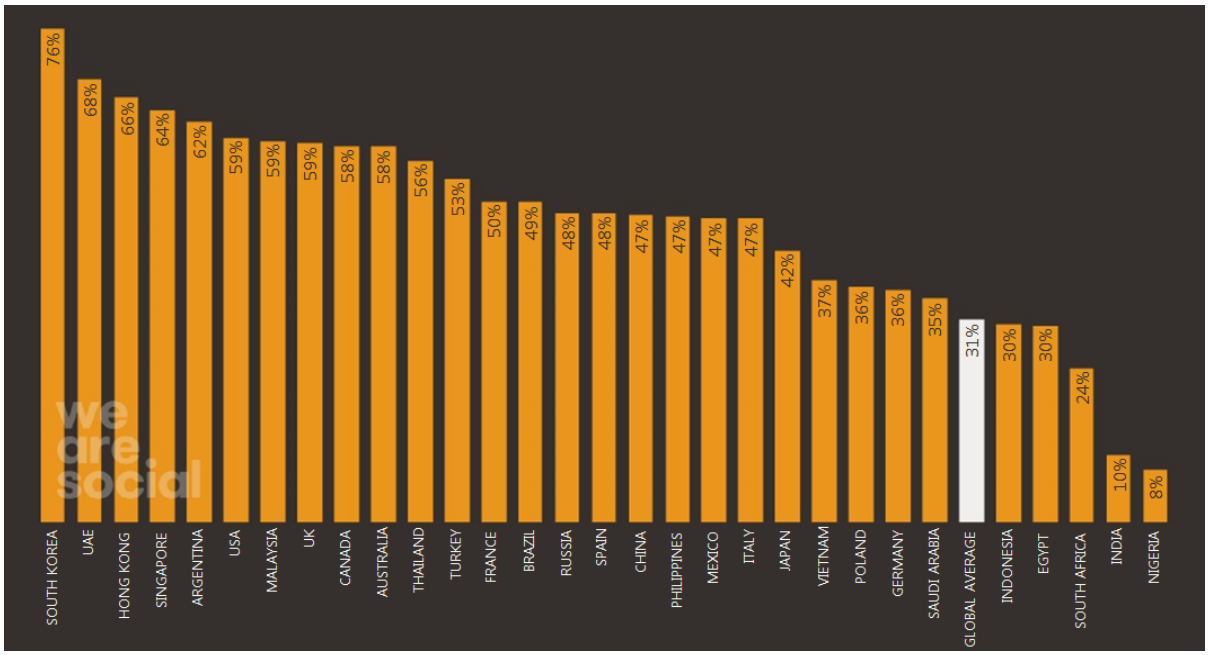

Figure 13. Social Media use by Country. Source: (Kemp, 2016)

Facebook continues to dominate the global social platform rankings with more than 1.5 billion active accounts. Other Facebook offerings such as WhatsApp grew by 50% in the 2015. Facebook Messenger continues to grow too, the application had 800 million active users in January 2016 (Kemp, 2016). Figure 14 depicts active users by social media platform.

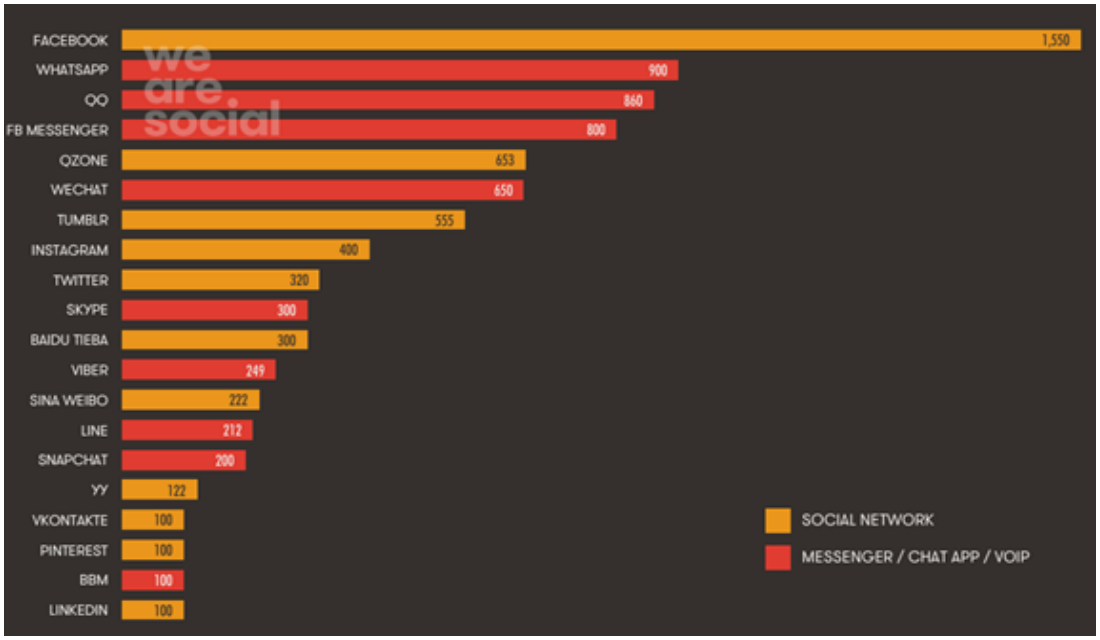

Figure 14: Active user by social platform. Source: (Kemp, 2016)

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2.4.1.4 Mobile Phone Use

The proportion of the global population that uses mobile phones is estimated to be over 95%. Growth in ICT access between 2010 and 2015 saw the average value for mobile phone penetration grow from 94 to 112 subscriptions per 100 inhabitants. The growth in mobile phone usage is attributed to people maintaining more than one active mobile subscription and machine-to machine connections. Very rapid growth in mobile phone penetration in a few countries led to very large movements in this indicator, with a number of countries, including Cambodia, Mali, Costa Rica, Gabon, Suriname and South Africa, having substantially improved their indicator value compared with others in the Index (ITU, 2015; Kemp, 2016).

The findings by Kemp (2016), on the unique mobile users for the key 30 economies indicate that Spain (87%), Singapore (85%) and Japan (84%) top the unique mobile users ranking (refer to Figure 15). The report further states that 65% of South African adults have access to mobile phones. This compares to 64% for Brazil, 52% for India and 40% for Nigeria (Kemp, 2016).

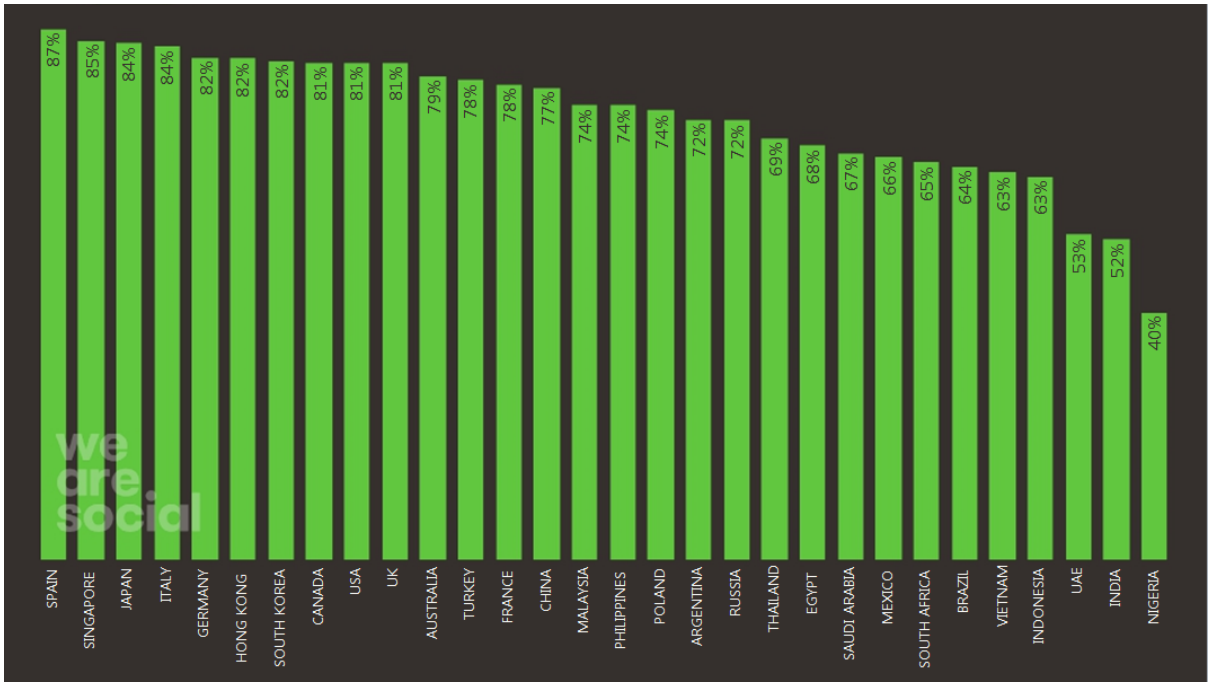

Figure 15: Unique user by country. Source: (Kemp, 2016)

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2.4.1.5 ICTs Usage by SMMEs in South Africa

This section presents empirical findings based on a study conducted in 2014 on a sample of SMMEs in South Africa. The objective of the study was to understand the impact of ICT usage on the competitiveness and survival of the SMMEs. The results are based on interviews with a randomly selected sample of 1,400 SMMEs in South Africa (Goldstuck, 2014).

2.4.1.6 Internet Usage

Goldstuck (2014), reports that the use of the Internet continues to grow in South Africa. In 2012, 63% of the SMMEs used the Internet. In 2014, this figure increased to 88%, leaving just 12% of the SMMEs that did not have Internet access (refer to Figure 16).

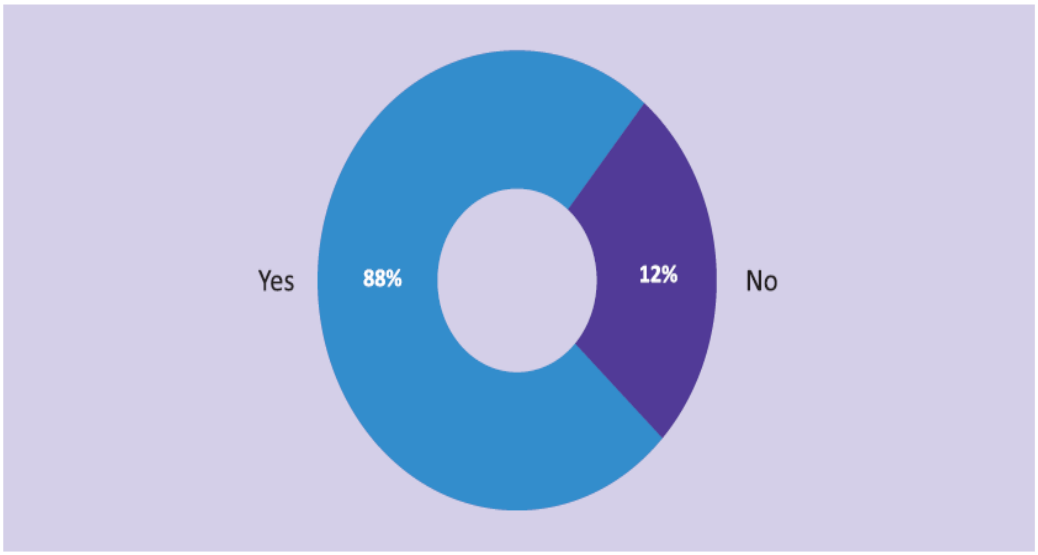

Figure 16: Internet usage. Source (Goldstuck, 2014)

Goldstuck (2014,) further notes that Internet connectivity has shown a considerable shift amongst the SMMEs. In a study conducted in 2012, 72% of the SMMEs were using ADSL for Internet connectivity, this figure declined to 54% in 2014. In 2012 the use of 3G was 5% compared to 3% in 2014. The 2014 study shows a more even spread of connectivity choices such as dial up ISDN used by 15%, public Wi-Fi hot spots by 6% and iBurst by 6% of the SMMEs (Goldstuck, 2014).

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2.4.1.7 Device Usage: Laptops

According to Goldstuck (2014), a majority of SMMEs (95%) used laptops in their businesses followed by PCs (93%), tablet usage was 82% and smart phones at 74% (Goldstuck, 2014). Table 6 displays the device usage by the SMMEs that participated in the study:

Table 6: Device usage by SMMEs. Source (compiled by the author)

Device Type	Usage %
Laptops	95%
PCs	93%
Tablets	82%
Smart Phones	74%

2.4.2 ICT Usage Barriers for SMMEs

SMMEs are compelled by internal and external forces to adopt ICTs in order to gain a competitive advantage in the global environment. However, a number of obstacles are cited in literature studies that hinder SMMEs from fully realising the benefits of ICTs. These factors include lack of awareness, lack of business opportunities, lack of strategic vision, lack of realisation of the benefits of ICT and lack of trust in ICT tools (Ongori and Migiro 2010). Other studies argue that SMMEs lack technical expertise (Barry and Miller, 2002), most lack adequate capital to carry out technical enhancements (Raymond, 2000) and most suffer from inadequate technical planning (Tettesh and Burn, 2001).

In developing countries, the ICT adoption barriers experienced by SMMEs include high cost of access to telecommunications, lack of government policy on ICTs, use of obsolete technologies, lack of skilled and trained manpower, poor communication infrastructure, high cost of ICT equipment and resistance to change (Mutula, 2004; Jain, 2002; Mutula and Brakel, 2006; Ongori and Migiro, 2010; Ismail et al., 2011). In their study Wolcott et al. (2008) grouped the challenges faced by micro-enterprises in developed counties into six categories, namely capabilities, resources, access, attitude, context, and operations, as depicted in Table 7.

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Table 7: Challenges to ICT adoption by SMMEs. (Source: Wolcott et al., 2008)

Category	ICT Adoption Challenges
Capabilities	Inadequate IT user skills
	Poor troubleshooting skills
	Inadequate IT development capabilities
	Limited IT planning ability
	Lack of IT knowledge
Resources	Lack of money
	Lack of time
	Lack of information
Access	Inadequate hardware and software
	Poor IT infrastructure
Attitude	Lack of engagement of management
	Resistance to technology
	Lack of value and personal incentives
	Excessive symbolic value of technology
	Lack of awareness
	Lack of confidence
	Lack of trust
Context	Cultural factors
	Mismatch between technology and social/business systems
Operations	Missing or inappropriate operational procedures
	Lack of operational support and administration

Herrington et al. (2010), found access to finance as a major problem for the South African entrepreneur; lack of financial support was the second most reported barrier after education. Olawe and Garwe (2010) also found access to finance, followed by economic factors, market factors, management and infrastructure, to be the most important internal and external obstacles preventing South African SMMEs from achieving growth. The empirical study by Ismail et al. (2011) raised lack of awareness on the benefits of ICT adoption and use, as well as security concerns, as the major barriers affecting South African SMMEs. ICT adoption barriers call for strategies to be put in place to curtail their undesirable impact (Heeks et al., 2008).

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In developing countries, the benefits of ICT use can only be realised when institutional foundations such as affordable telecommunication infrastructure, efficient transport systems, legal and regulatory policies and local credit management infrastructure are in place (Heeks et al., 2008). The strategies defined by Ongori and Migiro (2010), for minimising ICT barriers for SMMEs include infrastructure strategy, human capital development and the financial and legal framework, as shown in Figure 17.

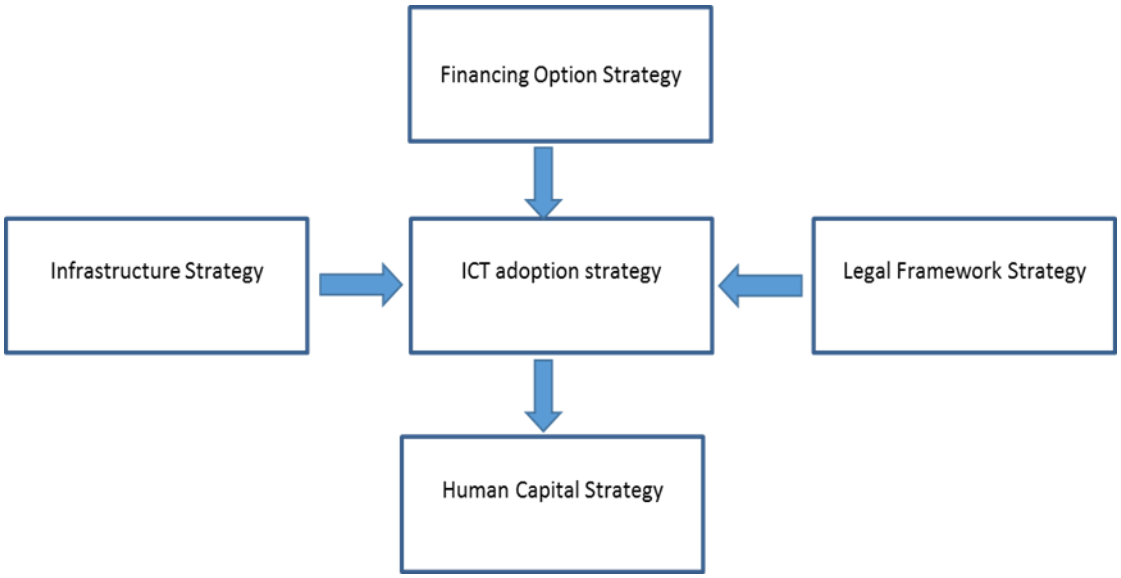

Figure 17: Strategies to decrease barriers to ICT adoption. Source (Ongori and Migiro, 2010)

The infrastructure strategy is normally offered by government through subsidies for SMMEs to obtain ICT services at reduced cost. This government intervention requires an ICT policy that promotes and incentivises ICT use by SMMEs. SMMEs stand to benefit if the government creates a legal framework that encourages ICT adoption by removing the barriers to adoption and creating a favourable business environment. Internal barriers will be resolved by the SMME owner's ability and motivation to access resources (finance and people) with more management focus on profits rather than sales. This will enable SMMEs to develop stable financial resources (Mutula and Brake, 2006; Chiware and Dick, 2008; Ongori and Migiro, 2010).

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Another effective approach cited in literature for mitigating ICT adoption barriers for micro-enterprises is the use of IT therapy applied by Wolcott et al. (2008) to a sample of 11 micro-enterprises in Omaha, Nebraska. The process of IT therapy entails providing individualised technology-related support aligned to the needs of the organisation. The use of IT therapy cannot address all the ICT adoption barriers; however, it is well suited to addressing associated capability and attitudinal challenges such as lack of trust, lack of confidence, lack of awareness and resistance to technology (Wolcott et al.,2008). The empirical study by Wolcott et al. (2008) provides a short-term solution and does not indicate how the use of IT therapy can be sustained over a long period for micro-enterprises that cannot afford technical support.

The use of intermediaries can bridge the information gap for small businesses by accessing the information on their behalf, thus reducing the cost of information and increasing the speed of communication (Jagun et al., 2008). This finding is supported by the study conducted by Heeks and Duncombe (2002) on micro-enterprises in Botswana that did not have access to ICTs, where the use of intermediaries played a role in bridging the information gap and increased the speed of service delivery to the end customers. The negative side of using intermediaries is the dependency that they create, as they hold information that the micro-enterprises do not have, which may lead to increased cost for the product or service being delivered (Jagun et al., 2008).

2.4.3 ICT Usage Benefits for SMMEs

The use of ICTs can provide several benefits across wide intra- and inter-firm business operations and transactions (Barba-Sanchez et al., 2007; Wolf, 2001; Ojukwu, 2006; Frempong, 2007). This section addresses the common benefits cited in literature.

2.4.3.1 Access to Markets and Growth

SMMEs in both the developed and developing world share a common interest in making their businesses more efficient, lucrative and sustainable. Globalisation offers SMMEs the opportunity to participate in regional and international markets. The ability of SMMEs to survive in the global environment largely depends on their capacity to leverage and benefit from information (Ongori, 2009; Migiro, 2006).

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Some studies point out the possibility of market expansion as a major benefit for SMMEs that use ICTs (Kiveu and Ofafa, 2013; OECD, 2004; Ojukwu, 2006; Ramsey et al., 2003). Kiveu and Ofafa (2013) explored the opportunities offered by ICT in enhancing market access for Kenyan SMMEs. The findings of the study indicate that opportunities exist for SMMEs to apply ICTs to facilitate communications, access information, identify markets, improve transactions, gain access to international markets, conduct online sales, undertake networking and lower transaction costs. Ojukwu (2006) found a strong link between the levels of investment in ICTs made by SMMEs and the growth of such organisations.

The increased demand and supply in the electronic marketplace from the use of ICTs results in a larger market for sellers, creating more choices for buyers (Moodley, 2003). Opportunities for price transparency and economies of scale and scope are therefore created for buyers and sellers (Heeks et al., 2008). The use of ICTs also gives firms the opportunity to become more visible and to form closer ties with suppliers and customers. This leads to improved customer satisfaction, loyalty, reputation and customer retention (Heeks et al., 2008).

2.4.3.2 Profitability

The use of ICTs enhances the efficiency of SMMEs by reducing costs and broadening market reach. The impact of these factors on individual SMMEs translate into positive results in the form of job creation, revenue generation and overall country competitiveness (Ongori, 2015). Chowdey and Wolf (2003) used the Cobb-Douglas production function to investigate labour productivity and returns for SMMEs surveyed in Tanzania and Kenya. The findings of that study concluded that ICT investments have no significant impact on the profitability of SMMEs. Esselaar et al. (2007) conducted a study in 13 African countries on the impact of ICTs on SMME profitability. The findings of the study dispute the findings of Chowdey and Wolf (2003), stating that the negative return on ICT investment reported in that study was caused by failure to use the formality index to distinguish between the formal and informal SMME sector. ICTs make a positive contribution to turnover generation by SMMEs across formality categories (Esselaar et al., 2007).

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2.4.3.3 Learning and Increased Labour Productivity

ICTs play a major role in enhancing labour productivity and the effectiveness of certain functions or activities of SMMEs by facilitating the automation of business processes. ICTs also enable the transfer of knowledge among team members and support the creation of knowledge in a particular area (Barba-Sanchez et al., 2007; Ongori and Migiro, 2010). Roberts (2000), suggests that ICTs increase teamwork by facilitating and improving the speed of knowledge transfer. The findings of the study by Esselaar at al. (2007) found that the use of ICTs increased labour productivity among sampled SMEs in 13 African countries. Wolf (2001) explored how the micro-level competitiveness of SMEs in Tanzania and Kenya was influenced by using ICTs. The findings of the study show that investment in ICT is one important determinant among others that improves firms' total factor production (TFP). An empirical study conducted on SMEs in Tanzania, found that the use of mobile phones led to improved SMME productivity, financial transactions, wealth generation and distribution (Melchioly and Saebo, 2010).

2.4.3.4 Informational and Administrative Efficiencies

The use of ICTs was found to lead to administrative efficiencies in a study conducted in a rural area of Gujurat, 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 sold milk to dairy cooperatives. The introduction of ICTs in the milk-collection centres increased transparency in pricing and led to faster processing, shorter queues and immediate payment to farmers (Cecchini and Scott, 2003). Another study on the effect of mobile phones on trading activities by micro-enterprises in Nigeria indicates how mobile phones enhance access to information before, during and after trade (Jagun et al., 2008). The use of mobile phones leads to improved communication and trading processes and restructuring of the supply chains (Jagun et al., 2008).

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2.4.4 Findings: Theoretical Studies on ICT usage by SMMEs

The theoretical studies discussed as part of the literature review on ICT use in SMMEs are summarised in Table 8. They report on various economic benefits that an organisation can derive from the use of ICTs, such as improved competitiveness, productivity and income (Ongori and Migiro, 2009; Barbara-Sanchez et al., 2007). The studies further discuss the challenges faced by SMMEs, as well as strategies for minimising the barriers (Ongori and Migiro, 2009; Barbara-Sanchez et al., 2007). The papers provide vital insights on the key role that SMMEs play in the economy and call for various stakeholders, including government and policy makers, to pay attention to their needs. The studies also highlight the benefits that SMMEs could derive from using ICTs to improve their business processes and their contribution to economic growth.

Table 8: Theoretical studies on ICT usage by SMMEs. Source (compiled by author)

Author	Summary Findings
Ongori and Migiro (2009)	The adoption and use of ICTs by SMEs can result in improved competitiveness and access to markets. The major barriers to ICT adoption and use include lack of financial resources, human resources, security and trust of ICT tools.
Barba-Sanchez et al., (2007)	This paper concludes that entrepreneurial orientation and innovation are key factors that determine ICT adoption and use by SMEs.

2.4.5 Findings: Empirical Studies on ICT usage by SMMEs

The empirical studies on ICT use by SMMEs are summarised in Table 9. The sample description, data source and research methodology used, as well as the summary of findings, are presented. Most of the empirical studies reviewed were conducted in developing countries, mainly on the African continent, including Nigeria, Botswana, Tanzania, Kenya and South Africa.

The key areas addressed by the empirical studies, according to the grouping presented in Table 7, are the benefits, barriers and ICT adoption rates by SMMEs. The studies conducted by Frempong (2007), Migiro (2006), Chiware and Dick (2008) and Ismail et al. (2011) analyse the types of ICTs adopted by SMMEs and their penetration rates.

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The formality of an enterprise is found to be the key determinant of ICT use cited by Esselaar et al. (2007) and Shiels et al. (2003). A conclusion can be drawn from the various findings in developing countries that SMMEs, especially in the informal sector, do not invest in the latest and more sophisticated ICTs because of high costs. The telephone, especially mobile phones, was found to be the most frequently used ICT because of its convenience and ease of use (Esselaar et al., 2007; Ojukwu, 2006; Ismail et al., 2011; Kiveu and Ofafa, 2013; Jagun at al., 2008; Duncombe and Heeks, 2002).

Some of the empirical studies look at the impact of ICT use at organisational level in the context of developing economies (Esselaar at al., 2007; Ojokwu, 2006). The findings of the empirical studies align to those of the theoretical studies regarding the micro-economic benefits of ICTs for SMMEs, including increased profitability, organisational growth and increased productivity.

The social benefits of ICT use, such as poverty reduction and social inclusion, were presented in only one empirical study conducted by Tarafdar et al. (2012). In their findings Tarafdar et al. (2012) indicate that the use of ICTs to enable market development has the potential to create jobs, leading to poverty reduction and access to valuable information.

ICT adoption methodologies, processes and frameworks were applied, including the model of IT-enabled business transformation (Shiels et al., 2003), the E-readiness conceptual model (Chiware and Dick, 2008) and the innovation and diffusion theory (Migiro, 2006). None of the theoretical frameworks developed by the studies in Table 8 was tested by the empirical studies in Table 9. The qualitative research method was used by all the empirical studies.

High ICT costs, lack of finance and inadequate skills are cited as the key barriers to ICT adoption and use in developing counties (Ismail et al., 2011; Lal, 2007; Mutula, 2004; Jain, 2002; Mutula and Brakel, 2006; Ongori and Migiro, 2010; Ismail et al., 2011; Kiveu and Ofafa 2013; Olawe and Garwe, 2010).

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The studies contribute to the body of knowledge by increasing empirical understanding on the important contribution of SMMEs in a developing country context. The studies also enable increased understanding of the use of ICTs, especially mobile phones, as the key communication tool used by SMMEs in developing countries.

The studies raise the need for interventions to be put in place by various stakeholders, such as the public sector, private sector, intermediaries and non-profit organisations, to improve the use of ICTs by SMMEs, e.g. reduction of ICT costs, provision of training opportunities to bridge the skills gap and an improved regulatory environment.

Table 9: Empirical studies on ICT use by SMMEs. Source (compiled by author)

Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Esselaar, Stork, Ndiwalana and Deen-Swarray (2)	3 691 SMEs from 13 African countries	Survey data	Qualitative and Quantitative	The use of ICTs by SMEs results in increased productivity. Mobile phones have become the default communication tool for SMEs.
Ojukwu (2006)	40 Nigerian SMEs across 5 industry sectors. Period: 1997 to 2001	Survey data	Qualitative	The study confirms a strong link between the levels of investment in ICTs made by SMEs and the growth of such organisations.
Melchioly and Saebo (2010)	15 SMEs from Morogoro, Tanzania	Exploratory case studies	Qualitative	The use of mobile phones improved the economic efficiency, free flow of business information, productivity, financial transactions, wealth generation and distribution of the SMEs.

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Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Frempong (2007)	280 SMEs from Ghana	Survey data	Qualitative	The extent and type of ICTs used by SMEs is linked to the formality of the enterprise. Mobile phones are frequently used by SMEs in the informal category. Low adoption and use of the Internet was due to cost of investment and potential returns on business activities.
Migiro (2006)	940 SMEs in Kenya	Survey data	Qualitative	The barriers to ICT use among SMEs in manufacturing are high costs, limited funding and lack of technical skills.
Chiware and Dick (2008)	338 SMEs and 197 business support organisations in Namibia. Period 2005 - 2007	Survey data	Qualitative and quantitative	SMEs are not utilising the newer technologies like the Internet; reasons cited include high costs, poor Internet connection speed and lack of awareness regarding the technologies.
Lal (2007)	67 SMEs in Nigeria	Survey data	Qualitative and quantitative	The inhibitors to ICT utilisation in Nigeria are interrupted electricity supply and communication connectivity infrastructure. Firm-level variables such as financial capacity, technological absorption capacity also influence the level of ICT use in SMEs.
Wolf (2001)	150 SMEs in Tanzania and 150 in Kenya. Period: November 1999 to May 200	Interviews Questionnaires	Qualitative Quantitative	Investment in ICT can improve the firms' performance (total factor production) once a certain threshold has been reached. The use of different types of ICTs (mobile, telephone, fax and computers) is linked to the education level of the users.

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Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Shiels, McIvor and O'Reilly (2003)	24 SMEs in Northern Ireland.	Case studies	Qualitative	The characteristics of the firm and industry sector contribute to the extent of adoption and exploitation of ICTs by SMEs. This study developed a conceptual model (ICT exploitation and business integration model) that provides a framework for determining the level of sophistication of SMEs in their exploitation of ICTs.
Olawale and Garwe (2010)	361 SMEs from the Eastern Cape	Questionnaires	Quantitative	The most important obstacles that prevent SMEs from using ICTs in South Africa are lack of finance and access to infrastructure.
Wolcott et al., (2008)	11 micro-enterprises in Nebraska (United States)	Observations and interviews	Qualitative	The use of IT therapy is recommended as an effective way of mitigating challenges to ICT use experienced by the micro-enterprises.
Duncombe and Heeks (2002)	Rural micro-enterprises not using ICTs in Botswana	Interviews and observations	Qualitative	The information needs of rural micro-enterprises can be met by using informal information systems. Intermediaries play a vital role in bridging the financial, socio-cultural and knowledge gaps experienced by the non-ICT users.
Jagun, Heeks and Whalley (2008)	Micro-enterprises in Nigeria	Case studies	Qualitative	The use of mobile telephony reduced time and financial cost of information-gathering for micro-enterprises.
Ismail, Jeffery and Van Belle (2011)	33 SMEs in South Africa	Questionnaires and interviews	Qualitative and quantitative	The use of ICTs adds value to SMEs and such use differs between the various sectors.

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Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Kiveu and Ofafa (2013)	SMEs in Kenya	Secondary data	Qualitative	The study recommends the following to be in place to improve market access for SMEs using ICT: awareness creation for ICT use, improvement in ICT literacy levels and infrastructure, development of user-friendly ICT programs, use of popular marketing sites and inclusion of ICT in marketing strategies

The following section looks at the relationship between ICT use by SMMEs and the reduction of poverty levels. According to Heeks et al. (2008), firms in developing countries have to achieve substantial benefits from adopting and implementing ICTs before they can contribute to development outcomes, i.e. economic growth, poverty reduction, socio-cultural, political and legal improvement. The use of strategies and theoretical frameworks by firms in developing countries to realise the benefits of ICTs will make the contribution to development more achievable and sustainable (Heeks et al., 2008).

2.5 ICT usage by SMMEs and Poverty Reduction

The objective of this section is to discuss how the use of ICTs by SMMEs can enable the reduction of poverty levels in developing countries. When discussing how ICTs contribute to poverty, this study draws on the arguments that view ICTs as tools that enable people's activities in order to improve their lives (Gigler, 2011). Sen (1985) stated that it is not just access to ICTs that it important, but also what people are able to do with them that is useful for reducing poverty (Adera et al., 2014).

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Poverty has no universal definition, as it comprises many variables according to which it can be measured. The original definition of poverty was based on income. According to that definition a person whose source of finance is below the poverty line is regarded as poor (Mogotlhwane et al., 2011). Recent studies argue that poverty is a multidimensional concept; it has social, economic, political and cultural dimensions that make it a priority for policy makers worldwide (Gaaf, 2003). The various dimensions of poverty are articulated as follows: The poor lack not only financial and material resources. They lack opportunities to convert the resources that they possess (e.g. skills, experience) into value-creating activities that can generate income and other resources (McNamara, 2003). The poor lack information that is important to improve their livelihoods; this includes information about market prices for goods and services, about health, their rights and income-earning opportunities (Marker et al., 2002). The poor are deprived of the information needed to enable them to participate in the wider society, at the local, national and global level (Harris, 2004). The poor lack communication opportunities vital for their lives and livelihoods. They spend disproportionate amounts of time and money for essential communication with their families, trading partners and suppliers of economic necessities (McNamara, 2003). The poor lack access to knowledge, education and skills that could improve their lives and expand their opportunities (Marker et al., 2002). The poor lack access to capital, financial resources and services that would permit them to enter into new value-creating activities. Where information flows poorly and communication is difficult, knowledge flows poorly as well.

The poor lack a voice and power in the institutions that affect their lives and are deprived of the opportunity to articulate their specific needs. The deprivations facing the poor are compounded by the shocks and vulnerabilities to which they are prone, e.g. global climate change, economic crisis, drought etc. The vulnerabilities and shocks can affect the poverty levels in a country by pushing more people into poverty and blocking the upward progress of those that have been on the verge of rising out of poverty (McNamara, 2003). One of the reasons for the high degree of excitement in the last decade about the potential of ICTs in combating poverty is its ability to deal with the information, communication and knowledge dimensions of poverty articulated above (McNamara, 2003).

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Poverty reduction is not likely to be addressed by the mere deployment of ICTs (Soriano, 2007). The benefits of ICT in poverty reduction are linked to a variety of factors; these include the integration of ICTs in the development policy to achieve development goals and using ICTs as an enabler of development to enhance capacity-building at the individual, community and societal levels. Support mechanisms are crucial to encourage and motivate poor communities and help them overcome their fear of technology (Tiwari, 2008).

2.5.1 Poverty reduction Strategies and Frameworks

When considering the use of ICTs for poverty reduction, two approaches can be identified, i.e. a supply side or demand side driven approach. A supply side driven approach focuses on the supply of technology, as well as connectivity and access. On the other hand, demand driven or market based approaches put the needs of the poor at the centre. Their main focus is development, capacity and knowledge-sharing (Gester and Zimmerman, 2003). The demand side poverty reduction strategies that emerged from the literature are discussed below:

2.5.1.1 Sustainable Livelihood Framework

The Sustainable Livelihood (SL) framework puts people first, i.e. people in rural areas, their assets, needs, their aspirations and constraints. Since the focus of this approach is on people and their needs, the role that ICTs play is the provision of relevant information that will have a significant impact on the lives of the poor. The use of local content, as well as appropriate ICTs, is crucial in making sure that the information reaches the poor. Initiatives that use the SL framework normally target the entire community. This strategy is bottom-up and encourages participation and involvement of communities (Gester and Zimmerman, 2003). Livelihoods refer to a means for living by exploiting capabilities of tangible and intangible assets (Chamber and Conway, 1991). The SL framework is mainly used in studies dealing with poverty and takes into account wider issues of livelihoods for households and communities beyond technology and income poverty (Duncombe, 2007, Makoza and Chigona, 2012). The livelihood framework of analysis views the poor as operating in a context of vulnerability and having access to certain capital assets or poverty-reducing factors.

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Access to poverty-reducing factors or assets for the poor is highly influenced by the prevailing institutions, organisations and social environment that ultimately affect livelihood outcomes (Duncombe, 2007).

Duncombe (2007) examined the use of ICTs and poverty reduction using the SL framework in small and micro-enterprises in Botswana. The findings of the study suggest that ICT applications may only bring marginal direct benefits in terms of poverty reduction. The study proposes the use of a livelihood approach to derive greater benefits from ICTs and strengthen a broader range of assets (social and political), structures and processes that favour the poor and improve their livelihoods. Soriano (2007) explored the link between information and ICTs and rural poverty reduction by analysing the role of community centres in enhancing the lives of rural poor households, using the livelihood framework. Evidence from the study reveals that telecentres have huge potential for reducing poverty through improving rural livelihoods. The direct (non-economic) and indirect (economic) benefits that can be realised through the use of ICT by the rural poor cited in literature that applied the livelihood framework are listed below:

Direct Benefits (Non-economic):

- Improved skills, health and education (Tiwari, 2008; Heeks et al., 2008)
- Access to information and empowerment of the rural poor (Tiwari, 2008)
- Enhanced use of public services (Tiwari, 2008)
- Capacity-building of local groups and government (Tiwari, 2008)
- Partnership between non-governmental organisations and local communities (Tiwari, 2008)

Indirect Benefits (Economic)

- Increased participation of rural labour in market opportunities as a result of better literacy skills through ICT (Tiwari, 2008; Soriano, 2007)
- Increased participation of rural labour in the market, which expands the share of the rural poor in the national income (Tiwari, 2008; Soriano, 2007)
- Higher indirect benefits to the rural economy (Tiwari, 2008)
- Increase in production (Soriano, 2007).

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2.5.1.2 The World Bank Strategy for Poverty Alleviation

The World Bank Report (2000) proposes a strategy for attacking poverty through ICTs in three ways: promoting opportunity, facilitating empowerment and enhancing security (Cecchini and Scott, 2003). The following section highlights ICT initiatives that focus on attacking poverty, using 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).

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 benefited the community, among others because the shop owners were able to increase the range of products being supplied (Ngassam et al., 2013).

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- Facilitating Empowerment

Empowerment makes state institutions work better for the people and removes social barriers. The removal of barriers to 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, 2010).

eGovernment is one of the tools 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 the 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 envisaged 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). The benefits derived from eGovernment initiatives include shrinking information and communication costs, maximising speed, broadening reach and eradicating distance (Matavire et al., 2010).

- Enhancing Security

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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 reduction strategy. The bank provides small loans to the poor for small-scale self-employment activities, focusing on women as the main beneficiaries. Its poverty reduction 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 with which the Grameen Bank was credited was the extension of 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).

2.5.1.3 Framework for Poverty Alleviation with ICTs

The work of Harris (2004) suggests a framework that facilitates understanding of how ICT can help reduce poverty. According to this framework, poverty reduction 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 reduction 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. This model is not prescriptive on how ICTs can be used to reduce poverty levels; it is a mere guideline to assist developing countries (Harris, 2004).

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Obayelu and Ogunlade (2006) applied the model of Harris (2004) and described how ICTs can be used to enhance the lives of women in Nigeria to fight the chronic issues of widespread poverty.

2.5.2 The impact of Mobile Money on Poverty Reduction in Kenya

Many development experts promote the usage of ICTs as a way to relief global poverty. The impact of ICT usage by SMMEs in developing countries has been reported in various empirical studies conducted in developing countries. A recently published study in Kenya which was conducted on households and small businesses from 2008 to 2014 provides valuable insights on the long term effects of mobile money usage on the economic development of the country. Mobile money is a service that allows momentary value to be stored on a mobile phone and sent to users via text messages. Mobile money allows financial services to be extended to the unbanked people at a significantly lower cost because physical infrastructure is not needed. The empirical study conducted in Kenya found that increased access to mobile money has reduced poverty in the country (Suri and Jack, 2016).

The rapid usage of mobile money has lifted an estimate of 2% of Kenyan households (194,000) out of extreme poverty. The technology has enabled 185,000 women to move out of subsistence farming into business or sales occupations (Suri and Jack, 2016).

The impact on poverty reduction due to mobile money usage in Kenya appears to be the result of improved financial behaviour by facilitating easier and safer savings. The results of the study revealed that mobile wallets offer a secure place to save as funds are stored virtually. The users utilised their savings during hard times or for productive investments such as establishing or expanding small businesses (Suri and Jack, 2016).

The study reported a 22.3% increase in participant's financial savings assets resulting from the usage of mobile money (Suri and Jack, 2016). Prior to the implementation of mobile money, the transaction costs of sending money over long distances had been prohibitively high. This was true both in terms of time as well as the financial resources required to effect transactions. Such high costs meant that small business owners had to form risk sharing networks with neighbouring peers.

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However, this proximity effectively reduced the effectiveness of these attempts at informal risk sharing as all the businesses in the network were vulnerable to experiencing the same local shocks such as drought, fires, crop or livestock diseases and floods at the same time. Therefore, the usage of mobile money extended the interaction networks enabling quicker, cheaper and more reliable money transfers over greater distances. It also allowed the users to diversify their informal risk sharing networks (Suri and Jack, 2016).

The study found mobile money users to be more financially resilient and equipped to protect themselves better against economic and other shocks. The users are also able to increase their consumption in bad times; this is key to enabling them to lift themselves out of extreme poverty. The increased access and usage of mobile money has been transformational amongst households and small businesses in Kenya, and it has the potential to benefit the rest of sub-Saharan Africa (Suri and Jack, 2016).

2.5.3 Findings from Theoretical Studies on ICT usage by SMMEs and Poverty Reduction

The theoretical and empirical studies on the usage of ICT by SMMEs towards poverty reduction are summarised in Table 10 and Table 11. The theoretical studies in Table 10 demonstrate how ICTs can be used as a tool to effect socio-economic development and poverty reduction in developing countries.

Proponents of ICTs take an optimistic view and highlight the positive effects of the different ICTs in creating economic, social and political opportunities for developing countries and the poor (Qureshi, 2005, Heeks et al., 2008, Gester and Zimmermann, 2003, Heeks, 2010). They argue that ICTs can contribute to economic development as a sector of economic activity or can enhance the productivity of other sectors of the economy (Chacko, 2005; McNamara, 2003).

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Based on this optimistic view, many development agencies and organisations tend to believe that ICTs have the capacity to bring about positive change (Akpan-Obong, 2010) or transform the socio-economic and political processes of a country when appropriately deployed, especially in an enabling environment (McNamara, 2003). This is because challenges that arise from poverty have an information, communication or knowledge component (Adera et al., 2014).

One of the important arguments made in the literature is that ICTs can enhance the productivity of other sectors of the economy. This perspective implies that ICTs can play an important role in poverty reduction interventions by the government and other development agencies (Srekumar and Rivera-Sanchez, 2008); they can stimulate development and expand economic growth or improve efficiencies that contribute to poverty reduction (Kenny, 2002). ICTs can also enhance the productivity of the manufacturing processes and industries and as a result lead to a reduction in production and transaction costs (Chacko and Harris, 2006). As a consequence, a reduction in costs can generate employment opportunities (Tiwari, 2008).

The use of ICTs enhances poor people's opportunities and strengthens their voice. This is attained when poor people access relevant information and knowledge that can broaden their choices to improve their livelihoods (Chacko and Harris, 2006; Cecchini and Scott, 2003; McNamara, 2003). A study by Cecchini and Scott (2003) found that farmers obtained information about crop prices in regional wholesale markets in telekiosks, which enabled them to negotiate better terms. ICTs offer the opportunity to promote governance and transparency of institutions. This is achieved when ICTs enhance communication and facilitate interaction between people and those in positions of authority (Chacko and Harris, 2006). In dealing with environmental risks and extreme weather conditions, a study conducted in ten villages in southern India found that the use of ICTs enabled fishermen in coastal areas to know when it was safe to venture out to sea (Arunachalan, 2004).

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An important contribution made by Duncombe and Heeks (2005) is the grouping of SMMEs into two categories, i.e. livelihood enterprises and growth enterprises. Most of the enterprises in developing countries are livelihood enterprises and have limited access to ICTs. Growth enterprises reflect a greater degree of maturity and already use ICTs (Duncombe and Heeks, 2005).

The theoretical studies provide context on what poverty entails and how it can be reduced using ICTs (Harris, 2004; Gester and Zimmermann, 2003; Duncombe and Heeks, 2005; Moodley, 2005). SMMEs' contribution to poverty reduction include improved livelihoods for the poor, provision of social benefits to the poor, such as enhancement of skills, increased self-confidence and empowerment (Duncombe and Heeks, 2005). The impact of ICTs in poverty reduction for poor communities includes improved access to information and communications, improved information about new opportunities and a reduction in transaction costs (Duncombe and Heeks, 2005; Heeks, 2004).

The types of ICT reviewed by the studies vary from general ICTs (Gester and Zimmermann, 2003; Heeks, 2004) to specific ICTs, such as the telephone (Kenny, 2002) and e-commerce (Heeks et al., 2008). ICTs play different roles in different types of enterprises, hence different strategies are required for livelihood and growth enterprises (Duncombe and Heeks, 2005).

The theoretical papers describe various approaches and strategies, including Sen's capability theory, the SL framework (Heeks, 2010) and the World Bank strategy for poverty reduction (Cecchini and Scott, 2003).

Most of the theoretical studies look at the role of ICTs at country, regional and community level with limited focus on SMMEs. The thematic findings on the studies reviewed in Table 10 and Table 11 support the argument of Duncombe and Heeks (2002) that limited work has been conducted on the link between SMMEs, ICTs and poverty reduction. What emerges from the theoretical studies is that some of the findings cited in publications conducted before 2005 are still relevant and require further research to be conducted.

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Table 10. Theoretical studies on ICT use by SMMEs and poverty reduction. Source (compiled by author)

Author	Summary of Findings
Gester and Zimmermann (2003)	The indirect benefits associated with the use of ICTs to reduce poverty are improved governance, job creation and income for the poor and removal of geographical barriers.
Heeks (2010)	The paper draws on the models of the enterprise value chain, empowerment and Sen's capability theory to demonstrate ICTs' contribution to economic growth, sustainable livelihoods and freedom.
Gillwald (2010)	The paper identifies areas of research to be focused on in the next few years to realise the potential of ICTs to effect economic growth, development and poverty reduction on the African continent.
Weiner and Rumiany (2007)	This study presents a new logic for reducing the global digital divide in Sub-Saharan Africa by applying ICT in three keys sectors, i.e. government, local business and education.
Harris (2004)	Poverty reduction can be achieved using ICTs, provided certain principles are followed. A poverty reduction framework is presented and defines factors that need to be adhered to in order to achieve success.
Moodley (2005)	The paper critically analyses the poverty reduction discourse in South Africa. I suggest a move away from the linear cause and effect model of technological determinism towards exploring alternative perspectives on society and technology.
Qureshi (2005)	This paper presents a model depicting the effects of ICTs on socio-economic development. The effects of ICTs outlined in the paper are access to information and expertise, competitiveness and access to markets, administrative efficiencies, learning and labour productivity, as well as poverty reduction.
Cecchini and Scott (2003)	ICTs can enable poverty reduction by enabling the poor to gain access to education, health and financial services, as well as connecting small businesses to markets. The realisation of the poverty reduction potential of ICTs in developing countries is not guaranteed.
Kenny (2002)	The low income of the poor, combined with their location in rural areas, makes the use of the Internet a financially disadvantageous method of communication for many poor people. Radio and telephone are more suitable and cost-effective technologies for the poor. The traditional ICTs (radio and telephone) can be used as an interface between poor people and the Internet.
Heeks, Boateng, Molla and Hinson (2008)	This paper develops a model that explains how e-commerce can contribute to socio-economic development.

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Author	Summary of Findings
Duncombe and Heeks, 2005	The paper provides a framework for understanding the role of ICTs on small, medium and micro enterprises. The role of ICTs for livelihood and growth enterprises differ; so does their contribution to poverty reduction. Policy implications need to cater for the different types of enterprises.

2.5.4 Findings from Empirical Studies on ICT use by SMMEs and Poverty Reduction

The empirical studies in Table 11 provide evidence on the use of ICTs to enable poverty reduction from a developing country perspective. The studies were conducted in China, India, Botswana, Nigeria, Tanzania and South Africa. The themes in Table 7 that are addressed by the empirical studies relate to the role of ICT on poverty reduction. Similar to the theoretical studies in Table 10, most of the empirical studies in Table 11 focus on the relationship between ICT and poverty reduction at national and local level, with limited focus on SMMEs. Tiwari (2008) and Soriano (2007) analyse the impact of ICT use on the livelihoods of rural poor communities.

Some of the empirical studies explore the impact of ICT usage on the livelihoods of micro enterprises in Botswana (Duncombe, 2007); South Africa (Makoza and Chigona, 2012) and Tanzania (Adera et al., 2014). The studies consider poverty reduction as an output of the benefits derived by SMMEs from using ICTs (Duncombe, 2007; Makoza and Chigona, 2012).

The framework that is most often applied by the empirical studies (Makoza and Chigona, 2012; Duncombe, 2007; Soriano, 2007; Adera et al., 2014) is the SL framework. This framework is applicable to studies dealing with poverty, as it encompasses a wider scope of poverty-related challenges (Makoza and Chigona, 2012).

The theoretical study by Heeks (2010) in Table 10 recommends the use of the sustainability livelihood framework for realising the development impact of ICTs on enabling additional livelihoods assets, enhancing strategies and improving livelihood outcomes.

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All the empirical papers adopt the qualitative research approach. Half of the studies in Table 11 use secondary data collected from official published national reports and reputable ICT and poverty reduction forums. The rest of the papers use data collected from SMMEs and local communities that are affected by ICT initiatives aimed at reducing poverty. The studies indicate that the use of ICTs alone can lead to marginal direct benefits in terms of poverty reduction (Duncombe, 2007). The usage of mobile money in Kenya indicates how an innovation that offers basic financial services such as the ability to safely store, send and transact money has the potential to directly boost economic well-being and lift people out of poverty (Suri and Jack, 2016).

ICTs should be used as a tool to support broader development goals aimed at targeting poverty reduction (Batchelor and Scott, 2005). Physical access to ICT does not always translate to usage and a favourable impact on users (Soriano, 2007).

The contribution of the empirical studies to the body of knowledge is the evidence they provide on the importance of SMMEs to the economy. Evidence from the empirical studies in Table 9 and Table 11 confirm that SMMEs derive benefits from the use of ICTs for sharing information and enhancing their business activities. The empirical studies in Table 11 further provide evidence that ICTs may lead to improved usage of assets and structures, resulting in poverty reduction (Makoza and Chigona, 2012, Duncombe, 2007).

Table 11: Empirical studies on ICT use by SMMEs towards poverty reduction. Source (compiled by author)

Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Batchelor and Scott (2005)	Development Assistance Committee Members Period: 2000-2005	Secondary data	Qualitative	The paper shows the link between ICT and pro-poor growth.

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Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Soriano (2007)	Two villages in China Period: February to June 2006	Desk research, interviews, surveys and focus groups	Qualitative	Telecentres have huge potential for reducing poverty by improving rural livelihoods. The positive implications of telecentres for the poor extend not only to economic aspects (such as earnings and production) but also to human (e-literacy and farming techniques) as well as social (creation of venues for community integration and knowledge sharing) dimensions.
Tiwari (2008)	100 users and non-users of ICTs in India	Surveys and interviews	Qualitative	The study validates the ICT-rural poverty linkage framework for ICT growth to be good for poverty reduction.
Duncombe (2007)	Micro-enterprises in Botswana	Secondary data	Qualitative	ICT applications may only bring marginal direct benefits for poverty reduction. From a livelihood perspective, greater benefits may be derived if ICTs are used to strengthen a broader range of social and political assets and if they enable the building of effective structures and processes that favour the poor.
Makoza and Chigona (2012)	5 micro-enterprises in Western Cape (South Africa) Period: October 2010 to February 2011	Interviews and observations,	Qualitative	ICT use has a positive impact on the livelihoods of microenterprises. Lack of awareness of ICT is reported as the main barrier affecting ICT use.

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Author, Title	Sample Description	Data Source	Research Methodology	Summary of Findings
Adera, Waema, May, Mascarenhas and Diga, (2014)	498 small and micro-enterprises in Tanzania	Surveys and focus groups	Qualitative and quantitative	Increased access to ICTs resulted in poverty reduction in areas where the users received interventions on ICT use.
Suri and Jack (2017)	3000 households and small businesses in Kenya. Period: 2008 - 2014	Surveys	Quantitative	The use of mobile money in Kenya increased per capita consumption levels and lifted 2% of Kenya's out of extreme poverty. The impacts of mobile money are attributed to improved financial behaviour, increased financial resilience and savings and as well as labour market outcomes such as a shift of the labour force from agriculture into business.

What emerges from the theoretical and empirical literature outlined above is that a positive relationship between ICT and poverty reduction remains contested (Adera et al., 2014). The work of Akpan-Obong (2010), argues that recent studies on the adoption and implementation of ICTs on development and poverty reduction reveal mixed results. McNamara (2003) argues that focusing on ICTs alone would not contribute to economic development and poverty reduction. The contribution of ICTs to poverty reduction depends on other factors such as an enabling environment and the context within which the ICTs are used (Adera et al., 2014).

One of the key arguments made in literature is that there is limited empirical evidence on the role and impact of ICTs and poverty reduction. It is argued that the proponents of ICTs tend to overstate the role that ICTs play in poverty reduction and emphasise the supply side of ICTs (Sreekumar and Rivera-Sanchez, 2008; Tiwari, 2008).

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Leye (2009) states that there are limited analytical studies that provide evidence that the relative benefits of investment in ICT infrastructure would compare to the benefits from investment in education, health, roads and industrial parks. Thus huge investments in ICTs do not necessarily mean that the relationship between ICTs and poverty reduction is unproblematic (Leye, 2009; Adera et al., 2014). The opponents to the contribution of ICTs to poverty reduction further argue that ICTs may favour privileged people or groups in society. In this way, ICTs can exacerbate the gap between the rich and the poor and further widen the income gap (Adera et al., 2014). The reason for this is that access to and use of ICTs is not just about connectivity, but also about people's capability to acquire and use the tools and content in ways that can improve their lives. The result is that those who lack these capabilities are excluded from the benefits (Leye, 2009). In their study, Sreekumar and Rivera-Sanchez (2008) point out that although the use of ICTs enabled farmers to access market prices of agricultural commodities, the information was only useful to farmers who had storage facilities and those who could harvest large quantities. Similarly, Soriano (2007) found that making telecentres available to rural communities did not give the poor access to them or the ability to use the information to improve their livelihoods. Soriano (2007) noted that the telecentres did not enable the poorer farmers to market their own produce because of their inability to produce in large quantities, lack of transportation facilities, and large expenses to market the goods on their own. The study by Tiwari (2008) found that people with higher levels of income, literacy and land ownership accessed ICT services more frequently than those with lower literacy, incomes and land ownership. These findings question the assumption that ICTs can reduce the digital divide and enable market participation of the poor (Adera et al., 2014). What emerges from the empirical and theoretical studies outlined above is that the positive relationship between ICTs and poverty reduction remains contested.

While some argue that ICTs have provided global dividends that have trickled down to the poor, others argue that the poor cannot benefit from ICTs because of lack of means to access ICTs, lack of skills to use ICTs, and inadequate information about the usefulness of ICTs (Adera et al., 2014).

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2.6 Overall Literature Findings and Gaps

The following has been found from the theoretical and empirical studies on the published literature regarding the intersection between ICT usage, SMMEs and poverty reduction:

- The economic benefits associated with ICT usage for SMMEs presented by most of the theoretical studies include improved competitiveness, productivity and income. Non-financial benefits of ICT adoption by SMMEs are not presented by the theoretical studies.
- In terms of the research approach and paradigm, majority of the studies adopted the interpretivism approach and applied the qualitative research method.
- Limited theoretical and empirical work has been conducted on the relationship between ICT, SMMEs and poverty reduction.
- The theoretical lens applied by the theoretical studies include Sen's capability theory, the SL framework, the World Bank strategy for poverty reduction, the e-commerce approach to development, a new logic for bridging the digital divide and the framework for poverty reduction with ICTs. The SL framework is the only theory cited in the theoretical studies that was tested empirically by three studies that examined the relationship between ICTs, small businesses and poverty reduction. The SL framework was applied to different sample types to determine the impact of general ICTs on the livelihoods of small and micro-enterprises in Botswana and South Africa respectively (Duncombe, 2007; Makoza and Chigona, 2012). The same framework was employed by Soriano (2007) to determine the impact of telecentres on the livelihoods of rural communities in China whilst Adera et al. (2014) applied the same structured thinking to communities as well as small and micro-enterprises in East Africa.
- The theoretical study of Heeks et al. (2008) defined the socio-economic impact of e-commerce on the capabilities of firms in developing countries, including skills, attitudes and knowledge. No empirical study was conducted to test the theory developed by the study.
- The empirical studies found the use of ICTs by SMMEs to have an impact on livelihood assets and structures and to reduce vulnerabilities (Duncombe, 2007; Makoza and Chigona, 2012). Limited information was found on the use of ICTs to acquire human capital assets (Makoza and Chigona, 2012; Adera et al., 2014).

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- The findings of other studies indicate that SMMEs frequently use mobile phones to share knowledge and to enhance their business activities, owing to their prevalence and accessibility (Esselaar et al., 2006, Duncombe, 2007; Makoza and Chigona, 2012).
- The empirical studies that applied the SL framework only used micro-enterprises and communities as the unit of analysis. This framework has not been tested on Small and Medium enterprises nor across the entire small business sector (small, medium and micro enterprises).
- The scope of ICTs that majority of the empirical studies focused on were general ICTs.
- In terms of the measure of poverty reduction, a majority of empirical studies that explored the impact of ICTs on SMMEs investigated it from an economic perspective; the social impact was not explored.
- The study conducted by Adera et al. (2014) on SMEs in Tanzania used a multidimensional measure of poverty and related vulnerabilities, which looked at the impact of ICT use on financial resources, social services, and human capability. The empirical studies by Duncombe (2007) and Makoza and Chigona (2012) in Botswana and South Africa respectively also applied the SL framework to analyse the informational needs of micro enterprises. These studies also applied the SL framework as the multidimensional measure of poverty.

Given the gaps in the literature discussed above, there is an opportunity to conduct an empirical study that applies the SL framework to analyse the role and impact of ICT usage on poverty reduction by various businesses in the small business sector (small, medium and micro). The scope of ICTs examined by the study can include modern ICTs (mobile phones, social media and the Internet) as opposed to general ICTs which have been analysed by majority of the studies examined in the literature.

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2.7 Concluding Summary

The review conducted in this Chapter systematically investigated the role of ICT usage by SMMEs on poverty reduction. The literature review indicates that promoting the growth of SMMEs is an important aspect of building a vibrant socio-economic environment. SMMEs serve the social goal of equitable income distribution by creating jobs and increasing the income levels of a large number of people. SMMEs can enhance livelihoods by reducing risks and vulnerability by strengthening financial and nonfinancial assets and by promoting social and economic empowerment. Therefore, governments throughout the world focus on the development of the SMME sector to promote economic growth. Evidence from literature suggests that SMMEs in developing countries face multiple challenges, e.g. lack of access to finance, lack of skills and poor infrastructure. To minimise the challenges, several solutions have been suggested, including the adoption of ICTs to boost efficiency and competitiveness.

The findings on the relationship between ICTs and SMMEs indicate that ICT usage by SMMEs increases the productivity process, stimulates income generation and efficiency of internal business operations and connects SMMEs more easily and cheaply to external contacts locally and globally. Empirical studies provide evidence that given their prevalence and accessibility, mobile phones have overtaken computers as tools for running SMMEs. The small business sector is faced with many challenges, which impede them from adopting ICTs in their business processes. These challenges include lack of finance, high ICT costs, lack of awareness of ICT benefits, security considerations etc. Various strategies are available in literature, aimed at reducing the barriers to ICT adoption, such as government interventions to promote the use of ICTs through offering subsidies and support programmes to SMMEs, intermediaries and IT therapy.

Poverty is multidimensional, and ICTs contribute to poverty reduction in terms of enhancing the ability of the business owners to undertake activities important in improving their business operations and their lives.

The results of this literature review align with the findings of other studies indicating the paucity of work that has been conducted on the socio-economic impact of ICT usage by SMMEs, despite their critical role in combating poverty.

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Empirical studies found the use of ICTs to have an impact on improving the livelihoods of micro enterprises. The SL approach was the most frequently used theory to analyse the impact of ICT use on poverty reduction.

The work covered in this Chapter provides context and enhances understanding on the relationship between ICT usage in SMMEs and poverty reduction. With reference to the research objectives, this section further articulates findings from literature studies relating to the types of ICTs used by the SMMEs as well as the benefits and barriers of ICT usage.

Based on the findings presented in this Chapter, the paucity of work on the relationship between ICTs, SMMEs and poverty reduction is the driving motivation to conduct an empirical study to explore this subject in more detail from a South African perspective.

The next chapter elaborates on the research approach and design that was followed to conduct the research project.

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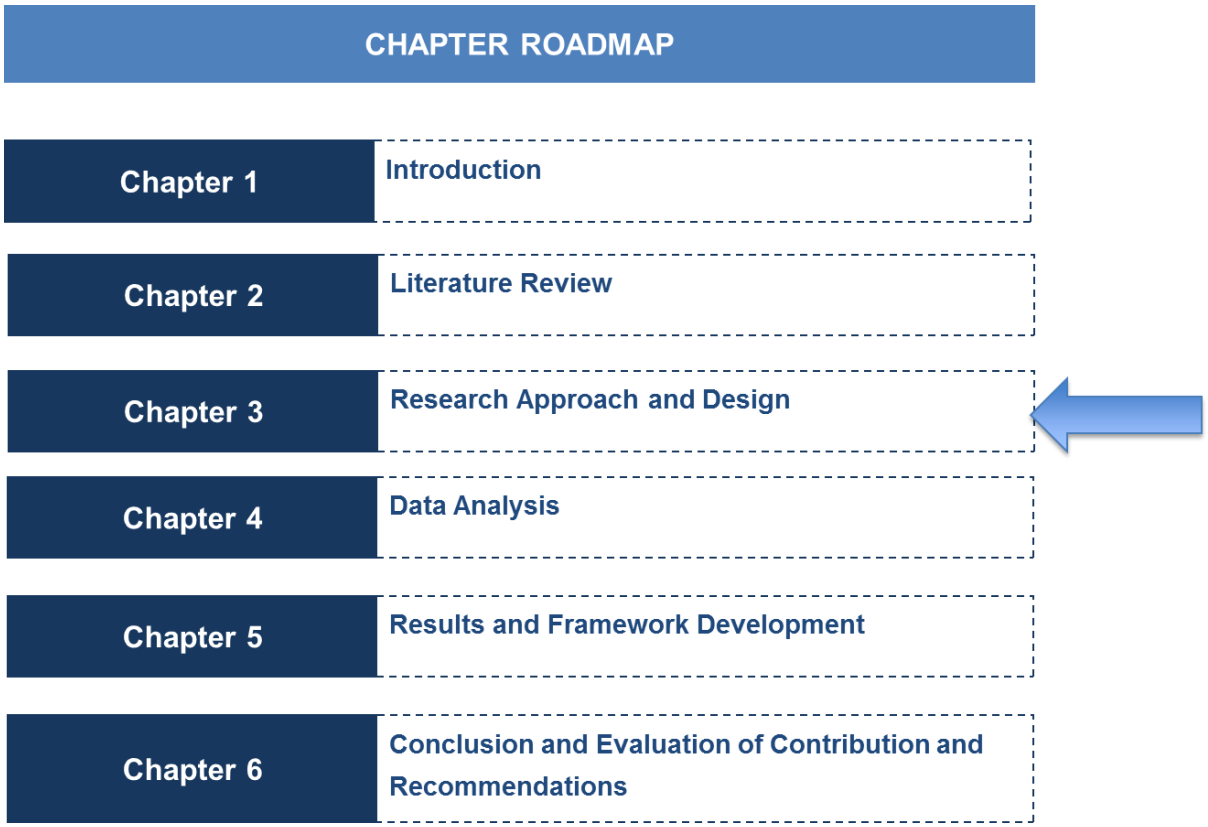
Chapter 3: Research Approach and Design



3.1 Introduction

The purpose of this Chapter is to describe the research design and approach that was followed in this study. This Chapter begins with a discussion on role of theory in information systems. Actor-Network theory (ANT) and SL framework are presented as the chosen theories for building a conceptual framework for this study. A discussion on the principles of research design is covered in the second section. A theoretical overview of the qualitative research approach is presented in the third section. The fourth section explains the chosen paradigm and the rationale for its pursuit for this study. The fifth section of this Chapter outlines the chosen research strategies used in the study. Supporting data collection methods used in the study are discussed in the sixth section. The seventh section presents the data analysis methods that were employed to make meaning of the findings. Sections eight and nine outline the quality assurance as well as ethical boundaries that guided the research process. The final section presents the concluding summary for this Chapter.

3.2 Theory and Information Systems Research

This section presents an overview of the theories that were investigated and considered to inform and guide the research. The Actor-network theory (Callon, 1999; Latour, 1996) and Sustainable Livelihood approach (Duncombe, 2007; Adera et al., 2014) were used to address the research questions and create a conceptual framework for this study. A conceptual framework refers to the structure, the scaffolding, or the frame of the study. Other researchers define a conceptual framework as the lens through which we view the world or the territory to be explored (Carroll and Swatman, 2000). This section firstly discusses the role of theory in IS research. The author then presents Actor-Network theory in the second section. The third section discusses the Sustainable Livelihood framework in detail. Finally, the author presents how the chosen theories complement each other.

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3.2.1 The Role of Theory in IS Research

According to Banville and Landry (1989), IS research has been viewed as not being dominated by a single methodological or theoretical paradigm but by pluralism in method and analysis. This view reflects the inter-disciplinary nature of the field (Truex et al., 2006). Lee (2001, p412) explains this distinction stating that "Research in information systems field examines more than just the technological system, or just the social system, or even the two side by side; in addition, it investigates the phenomena that emerge when the two interact".

The use of theory is required to enable a better understanding of IS by linking the natural world, the social world and the artificial world of human construction. The different perspectives of theory presented in literature show theories as abstract entities that aim to describe, explain and enhance understanding of the world (Gregor, 2006). The use of theory enables the researcher to make sense of complicated and contradictory real-world phenomena. Theory acts as a lens that magnifies certain things while filtering out others presumed to be noise. Theories are also presumed to affect what we see and what we do not see (Jones, 2000). In her study, Gregor (2006) distinguishes between five interrelated types of theory as indicate in Table 12.

Table 12: Theory Types in Information System Research: Source: Gregor (2006)

Theory	Description
Analysis	The theory says what is. It does not extend beyond analysis and description. Causal relationships amongst phenomena are not specified and no prediction are made.
Explanation	The theory explains what is, how, why, when and where. No predictions nor testable propositions are made.
Prediction	The theory explains what is and what will be. The theory also provides predictions and has testable propositions. However, it does not have well-developed causal explanations.
Explaining and Predicting,	The theory explains what is, how, why, when, where and what will be. It provides predictions and has testable propositions and causal explanations

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Theory	Description
Design and action	The theory explains how to do something. It gives explicit prescriptions (e.g. methods, techniques, principles of form and function) for constructing and artefact.

All the five types of theory are very different, what they have in common is that they are all used to accumulate the state of knowledge and enlighten professional practice (Truex et al., 2006). While it is argued that no theory class is exclusively the province of any paradigm, proponents of the intrepretivist paradigm have argued for the recognition of the theory for explaining and not the theory of prediction. The theory of explaining could be labelled as the theory for understanding. The theory of explaining emphasises on showing others how the world may be viewed in a certain way with the aim of bringing about a different understanding of how things are and why they are as they are (Gregor, 2006).

The high level theories that fall into the theory of explaining category include structuration theory, Actor-Network theory and the situated-action perspective (Gregor, 2006). The theory of explanation using ANT is the chosen theory for this study to create a better understanding or insights on how the use of ICTs by SMMEs can enable poverty reduction. The next section presents ANT in more detail.

3.2.2 Actor-Network Theory

ANT was developed by Callon (1986); Latour (1987) and Law (1994). It was further enhanced by the original authors and other researchers (Latour, 1999; Law, 1992; Law and Hassard, 1999). What distinguishes ANT from other conventional theories are the associations that exist and are created between the technology and its surrounding actors which are both technical and social. ANT advocates a socio-technical approach which implies that neither the socio nor technical approach is more superior than the other. According to Law (1992) ANT is concerned with "studying the construction and transformation of heterogeneous networks which are made up of people, organisations, agents, machines and many other objects that constitute the world consisting of both human and non-humans".

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ANT also focuses on how networks are formed, arranged, sustained and maintained over time. ANT also investigates how actors align with other actors and share qualities, desires, vision and motivations amongst each other (Latour, 1996).

3.2.2.1 Key Features of ANT

ANT describes the social world as one that comprises of heterogeneous networks that consist of the actors. ANT researchers are cautioned from distinguishing between the social and technological phenomena (Law, 1992). Humans and non-humans are treated in the same way as they all form part of the same heterogeneous network (Monteiro, 2004). According to Callon (1986) there are three methodological principles that address the need to treat human and non-human factors the same way i.e.:

- Agnosticism – according to this theory the researcher refrains from judging whether the actor is human or non-human and becomes impartial towards the actors.
- Generalised Symmetry – this theory allows the researcher to report on conflicting views of the actors in a standard way by using abstract and neutral vocabulary. This rule aims to avoid privileged explanatory status for the technical or social actors.
- Free Association – This principle prohibits the researcher from distinguishing between the technical and social.

3..2.2 Understanding the Actor

In ANT something is an actant if it makes a difference, if it has an effect or leaves a trace that c2ould be established and described (Latour, 2004). An actor is "any element that bends space around itself makes other elements dependent upon itself and translates their will into a language of its own" (Callon and Latour, 1981, p286).

ANT does not make a priori position on the nature of any entity but states that all entities (human or non-human) are products of a network. An entity can only be understood once its network has been analysed (Latour, 1996). ANT uses a conceptual framework to analyse the functioning, effects and relations between the actors.

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No individual entity could act on its own because it needs the energy and power of other entities to have an effect. Each actor is made up of actors and at the same time is part of an actor. In ANT it is possible that entities such as people, material things, technologies, ideas or natural events could all be actants (Postma, 2009; Lewis and Westlund, 2015).

3.2.2.3 Understanding the Actor-Network

The key focus of the ANT researchers is the actor-network, or the collective. These two concepts should not be seen as nouns but as verbs that mean to network and to connect (Postma, 2009). The actor-network is realised through the 'enrolling' of human and non-human participants into a network through processes of negotiation and translation. It is through the alignment between each other that the actors form an actor-network (McLean and Hassard, 2004). A network can be established through the tracing of associations and distribution of power between entities. The network consists of the following: actants and entities in association. In ANT an individual entity cannot act on its own but can only do so with other entities as a collective in a network. The collective does not refer to everything but only to the relations amongst the entities which constitute the network (Postsma, 2009).

Law and Hassard (1999) express that it is important to understand the word actor and the word network as there is a difference between the older and the new usage of the terms. They further question the use of the hyphen in the phrase as it suggests two separate entities between whom a relation exists. This theory relates to two faces of the same phenomenon. One must therefore be careful when working with the connotations ANT attaches to words (Postma, 2009). According to ANT the actor and network are two sides of the same thing that cannot be separated into different entities.

It is important to distinguish ANT's conception of the network with that commonly used in notions such as a network society (Castells, 2000). In these conceptions existing, established and well-defined entities relate to each other as nodes in multiple relations. ANT should not be confused with a network linking predictable elements that are perfectly defined and stable, the entities that it is composed of could at any moment redefine their identity and mutual relationships in some new way and bring new elements into the network. Callon (1987), is cited to have observed that once a network

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is formed it is not formed once and for all, it can become unstable given the changes in the actors and alliances (Postma, 2009).

3.2.2.4 Successful Networks

Successful networks occur when aligned interests are created through the enrolment of a sufficient body of allies and where the network is maintained through the translation of interests that bind all actants. Each modification in the network can be considered a displacement that affects not only other actants, but also their networks with others (Rhodes, 2009).

3.2.2.5 Destabilised Networks

Destabilised networks occur when networks are adapting to a consequent redistribution of power relations precipitated by a change in the beliefs on which they were constructed. These may also occur as a result of new information, policy shifts, new technology or a change in the actors or by certain actors backing out as they had not been authentically enrolled (Rhodes, 2009).

3.2.2.6 The Sociology of Translation

According to Latour (1987), the sociology of translation is an alternative to technological determinism. For facts to spread in time and space and to become long lasting, they need actions of others through translation. "Translating interests means offering new interpretations of interests and channelling people in different directions" (Latour, 1987, p5). The translation process renders the Actor-Network imperative hence it cannot be taken for granted. The strategies used during the translation process vary, they highly depend on circumstances which can include negotiation, persuasion, simple bargaining and violence (Rhodes, 2009). The translation process is also dynamic, one entity may request the support of others or they may form alliances elsewhere (Rhodes, 2009).

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The obligatory passage point (OPP) must occur for all the actors to achieve their interests as determined by the macro actor when ICT is introduced in the network. The new meaning is viewed as the solution to a problem in terms of the resources available to the actant that proposes it as the OPP (Rhodes, 2009).

As the network develops certain actors become important as representative spokes persons, sometimes referred to as a macro-actor or the translator spokesperson (Rhodes, 2009). The translation of an actor into a network is achieved through a series of four "moments of translation", namely problematisation, interessement, enrolment and mobilisation (Callon, 1991). Figure 18 depicts the key ANT concepts and translation moments:

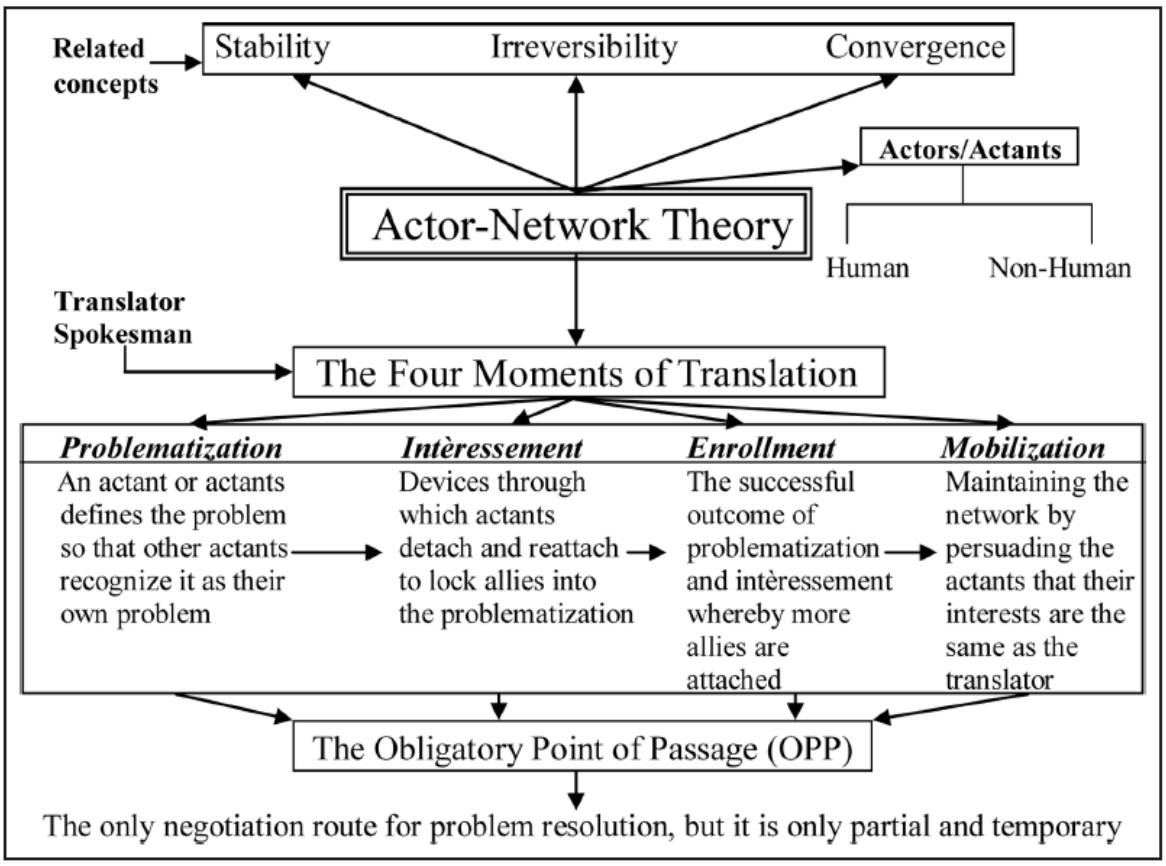

Figure 18: ANT key Concepts and Translation moments. Source: Adapted from (Rhodes, 2009)

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- *Stabilisation*

Stabilisation results from a sequential process where new circumstances or changing membership leads to successive moments of agreement. In order to ensure stability and irreversibility of a network, the human environment (social context) requires constant cultivation and nurturing through a network of alliances. Stability of the network is vulnerable to new perspectives, defectors and betrayals (Rhodes, 2009).

- *Irreversibility*

Irreversibility indicates the extent to which it is impossible to go back to a point where that translation was only one amongst others. This shapes and determines subsequent translations (Rhodes, 2009).

- *Convergence*

Convergence is the extent to which the process of translation leads to agreement as measured by the degree of accord resulting from a series of translations (Rhodes, 2009).

3.2.2.7 Motivation for Selecting ANT

ICT usage includes both the social and technical aspects; ANT will therefore address these equally without putting more focus on the other. According to Jones (1999), ANT cannot be attributed to either humans or technology but to networks that are per definition hybrid entities. One can therefore not simply ask about an effect of a particular technology such as Lotus Notes but the way in which the technology becomes part of a network and what the effects of this new hybrid are. ANT allows the development of a rich language for describing how technology, actors and social arrangements are constantly shaped and how they interact over time. By looking at the relationships between actor and institutions, the environment and artefacts it identifies Actor-Networks as the fundamental building blocks of technology (Faraj et al., 2004).

In this study the role and impact of ICTs as an entity was analysed amongst SMMEs, to establish their different translations and effects. The researcher used ANT as a lens through which to review the research settings and a language for discussing the dynamic events in which this research is located.

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The interpretation of the research findings was not only based on the interviews and documents that were reviewed it also took into consideration the interactions and relationships between the social and technical actors especially how they influenced each other.

Tatnall and Gilding (1999) acknowledged that actor-network theory can be useful in the studies of information systems where interactions of social, technological and political are regarded as particularly important.

Monteiro (2004) adds that ANT cuts across economic, political, strategic, social and technical issues related to IS implementation and enables the researcher to make sense of the implementation process. IS researchers have demonstrated the strengths of ANT in IS studies and emphasised its potency over other theories such as Structuration theory "The Structuration theory approach has been picked up by a vast number of scholars and a vast range of studies have been carried out. These have given us many valuable insights into the social processes related to adoption and use of information systems. There is one aspect of these studies that is of crucial importance. That relates to the role of technology in these studies as well as the theories they are based on. These go equally well (or more precisely, badly) for both Structuration theory and institutionalism. The studies on information systems based on these theories do not address the role of technology in a proper way. This fact is largely a consequence of the fact that these theories totally ignore technology. In this respect ANT offers some unique and very important contributions to information systems" (Hanseth and Aanestad, 2004, p 117).

3.2.3 The Sustainable Livelihood Framework

The SL framework has been popular amongst development practitioners and researchers since the late 1990s and indeed was a central concept of the United Kingdom's (UK) Department for International Development's (DFID) strategy during the early years of the UK New Labour government (Morse and McNamara, 2013).

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The call for an emphasis on sustainable livelihoods was set out in the 1997 White Paper on international development as follows:

…" refocus our international development efforts on the elimination of poverty and encouragement of economic growth which benefits the poor. We will do this through support for international sustainable development targets and policies that create sustainable livelihoods for poor people, promote human development and conserve the environment" (DFID, 1997, p6).

Chambers and Conway (1992), define a livelihood as "a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term"(Chambers and Conway, 1992, p7).

The SL framework was founded upon the notion that intervention must be based upon an appreciation of what underpins livelihoods. The SL framework is often formally set out diagrammatically as shown in Figure 19.

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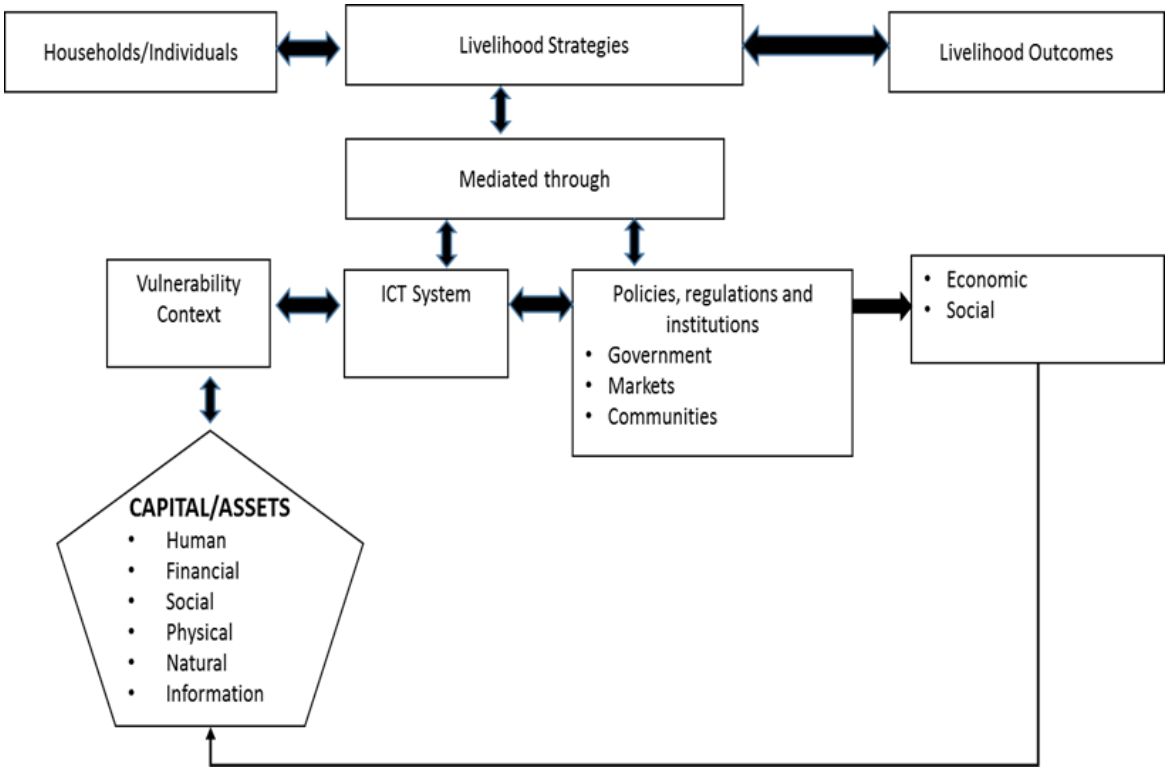

Figure 19: The Sustainable Livelihood Analysis. Source (Duncombe, 2007; Adera et al., 2014)

At its core, the SL framework is entails the assessment of the different capitals that are deemed to underpin livelihood at the level of the individual, household, village or any group of stakeholders that are being analysed. These capitals are classified as human, social, physical, natural and financial. As part of the framework, the capitals are assessed in terms of their vulnerability to shocks and the institutional context within which they exist. Once this is understood then interventions can be put in place to enhance livelihoods and their sustainability, perhaps by increasing the capital available or by reducing vulnerability. Thus the process is about understanding the current situation and developing suggestions for improvement based upon that understanding. The SLA is meant to avoid a situation where intervention is unguided giving little positive impact or is at worst detrimental (Morse and McNamara, 2013).

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3.2.3.1 Application of SL Framework

The SL framework does not specify particular methods and techniques that have to be applied to explore the capitals, institutions and vulnerabilities. In practice, the process of applying the framework could utilise various range of methods including standard techniques based upon observation, focus groups and interviewing. The SL framework provides a guide as to what should be looked for and not necessarily how to do the looking (Morse and McNamara, 2013). However, while the logic behind the SL approach has been set out by other studies as a mechanical cause-effect approach, Krantz (2001) argues that there are two ways of using this approach. On the one hand there is the approach taken by DFID which sees SL approach as a framework for analysis, while other agencies such as UNDP apply it to "facilitate the planning of concrete projects and programmes" (Krantz, 2001, p3-4). Morse and McNamara (2013) view the purpose of SL approach as to help analyse a situation whose output would enable the selection of appropriate interventions to address the challenges experienced.

Farrington (2001), presents a more nuanced view of the different dimensions for applying the SL approach:

- The SL approach can be used as a formal framework to help understand what 'is' and what can be done. The framework helps aid an appreciation of the capitals which are available to people being analysed, their vulnerability and the involvement of institutions.
- The approach can be seen as a checklist of points that need to be considered before an intervention is planned,
- Finally, the SL framework can be used to guide the overall developmental objectives. This can be achieved in various ways such as making capital less vulnerable, enhancing the contributions that some capitals can make or improving the institutional context (Farrington, 2001).

Morse and McNamara (2013), state that the SL framework has helped establish the principle that successful decisions on development interventions must begin with a reflective process of deriving sufficient evidence from various stakeholders.

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3.2.3.2 Capitals SL Framework

The SL approach is an example of a 'multiple capital' approach where sustainability is considered in terms of available capitals (natural, human, social, physical and financial) and an examination of the vulnerability context (trends, shocks and stresses) in which these capitals (or assets) exist (Duncombe, 2007).

Morse and McNamara (2013, p30) define capitals as …" means by which people can engage more fruitfully and meaningfully with the world, and most importantly the capability to change the world, they are not just 'things' that go into a production process but also a basis for power to act and ultimately to bring about change in society". Bebbington (1999), suggests that capitals take on three distinct roles:

- Vehicles for instrumental action (making a living)
- Hermeneutic action (making living meaningful)
- Emancipatory action (challenging the structures under which one makes a living).

Sey (2001), adds that use of capitals can embrace information technology and enhanced connectivity via devices such as mobile phones.

3.2.3.3 Vulnerability and Institutional Context

Once these capitals have been identified and assessed their contribution, it is important to explore the vulnerability context in which they exist; the trends (over time and space), shocks and stresses. Shocks may indicate a more sudden pressure on livelihood e.g. an economic downturn can take place over years and lead to unemployment and dampened markers. The SL framework encourages the researcher to consider a range of pressures that already exist and predict those that could exist in the future (Scoones and Wolmer, 2003).

Furthermore, as part of the SL framework it is necessary to examine the policy and institutional context within which these capitals exist, including the legal context (Ashley et al., 2003).

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While some capitals may be vulnerable to certain shocks it may be that authorities are able to act and limit any damage which occurs. It is not only government services which need to be considered here as they may be non-governmental agencies that can provide support for livelihoods. It is not only a matter of considering each institution in isolation that matters but also the ways in which they do, or do not work together (Morse and McNamara, 2013). The importance of institutions is often echoed within the sustainable livelihood literature in a variety of contexts. Institutions influence access to many of the capitals as well as peoples' opportunities and choices. Institutions can help govern social relations and power structures in various ways. Challies and Murray (2011), highlight the importance of institutional support for small-scale raspberry growers in Chile by improving their capacity to comply with safety and quality standards and hence gain and retain global market access.

3.2.3.4 Advantages of SL Framework

According to Krantz (2001), the concept of Sustainable Livelihood is an attempt to go beyond the conventional definitions and approaches to poverty reduction. The conventional definitions of poverty had been found to be too narrow because they focused only on certain aspects of poverty, such as low income, or did not consider other vital aspects of poverty such as vulnerability and social exclusion. The design of the SL approach enables a wider perspective of poverty and is relevant for use in situations where people may have multiple contributions towards their livelihood and enables a consideration of interactions and trade-offs (Tao and Wall, 2009).

The SL approach can be applied in various socio-economic contexts, this approach has been employed on rural and urban populations. Over the years the SL framework has been advanced by various researchers to build from existing knowledge and experience rather than taking a new direction (Makoza and Chigona, 2012; Morse and McNamara, 2013).

An assumption underlying the use of the SL framework is that change happens and livelihoods are dynamic rather than static. The importance of understanding the history of where people is a key advantage of the SL framework.

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This helps in appreciating why things are the way they are and why people do what they do thereby informing decision making (Scoones and Wolmer, 2003).

The SL framework is flexible and can be implemented in many different ways depending upon local context and expertise available for the analysis (Bondad-Reantaso et al., 2009; Nha, 2009).

3.2.3.5 Critique of SL Framework

The SL framework has had its critics over the years, its proponents are often careful to highlight that it is not a panacea (van Dillen, 2002; Sillitoe ,2004; Toner and Franks, 2006; Small, 2007; Kelman and Mather, 2008). Some of the criticisms of the SL approach are set out as follows:

- The SL framework is not explicit on some of the key aspects required for a people-centred approach such as people and culture. This risks the approach becoming mechanical a cluster of task oriented activities (Brinson et.al, 2009; Morse and McNamara, 2013)
- The SL framework does not clearly state how to analyse and measure capitals. The framework further does not indicate whether it is necessary for all the assets to be measured or only some (Morse and McNamara, 2013).
- The importance of trust and openness is key to successful application of the SL framework. The SL outcomes may be distorted if the participants are not willing to share sensitive information relating to their assets (Lapeyre, 2011).
- It may not always to possible to predict vulnerabilities at a macro-level. A historical analysis could enable the researcher to determine the likelihood of what could occur even if it does not define when

3.2.3.6 Motivation for Selecting SL Framework

A key proponent of the SL framework (Chambers, 1995), argues that the approach used by development professionals to conceptualise poverty is different from how people view this concept. Chambers (1995), further states that people perceive poverty in a more complex manner than development professionals, their strategies include a number of factors that are aimed at more than income generation. People's priorities also include

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strategies to minimise risks as well as protecting or increasing the things that they value (Chambers, 1995). Based on the argument above, the SL framework is thus considered appropriate for use as it incorporates various perspectives and realities of the people. The framework can also be adapted to fit any particular context (Makoza and Chigona, 2012; Morse and McNamara, 2013). Of particular importance to ICTs, the SL framework contains multiple dimensions that are interrelated in a dynamic manner (Bryden, 1994).

Due to its flexibility, the SL framework has been extended by various studies to analyse ICT applications for poverty reduction in poor communities and business enterprises (Bebbington, 1999; Soriano, 2007; Duncombe, 2007; Gigler, 2011; Makoza and Chigona, 2012; Adera et al., 2014; DFDI, 2001). The same general principle applies to all the adapted SL frameworks, they all focus on the beneficiaries as actors that make decisions and formulate strategies that are informed by the resources available to them as well as the environment in which they exist.

The application of the SL framework will enable the researcher to achieve the research objectives by understanding the context within which SMMEs use ICTs and propose ways to improve their livelihoods through efficient usage.

3.2.4 The use of ANT and SL Approach

In the section above I discussed the two theories that encompass the theoretical underpinning for this study. The two theories were selected as appropriate due to the role they will play towards enriching understanding on the research phenomena and achievement of the research objectives. The application of ANT acknowledges the existence of various actors and views the social and technology system as inseparable. The use of ANT in this study aims to advance the understanding of human and non-human actors as well their roles. The use of ANT will further enable the researcher to understand how the various actors and element in the network interact.

The discussion in the previous section highlights the SL framework as appropriate for use in poverty reduction initiatives. Similar to ANT, the SL framework acknowledges the existence of various actors and enables a better understanding of their interaction.

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ANT and the SL framework both enable the researcher acquire an in-depth context on what is currently being done and what is planned for the future. The key differentiator of SL framework from ANT is its multidimensional view to measure poverty reduction.

3.3 Research Design

A research design serves as the blueprint or outline for conducting a study. The researcher uses the blueprint as a plan for obtaining answers to the research questions guiding the study (Myers, 2009). Designing a study provides structure and guides the researcher towards defining a plan that can be implemented to achieve the intended results (Burns and Grove, 2001). According to Myers (2009), a qualitative research project consists of the following building blocks:

- A set of philosophical assumptions about the social world;
- A research method;
- One or more data collection methods;
- One or more approaches to qualitative data analysis and
- A written record of the findings

According to Remenyi et al. (1998), cited in Range (2015), the process of conducting research consists of the following eight phases:

- Reviewing the literature;
- Formalising a research question;
- Establishing the methodology;
- Collecting evidence;
- Analysing the evidence;
- Developing conclusions;
- Understanding limitations of the research;
- Producing management guidelines and recommendations.

Hussey and Hussey (1997), cited in Range (2015) identify the following as the most fundamental stages in the research process:

- Identification of the research topic;
- Definition of the research problem;

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- Determining how the research is going to be conducted;
- Collection of the research data;
- Analysis and interpretation of the research data;
- Writing up the dissertation or thesis.

The research roadmap followed in this study is drawn from the perspectives presented above, this is depicted in Figure 20.

Figure 20: Research Roadmap. Source: Adapted from Myers (2009); Range (2015); Hussey and Hussey (1997) and Remenyi et al., (1998).

3.4 Qualitative Research Approach

The qualitative research approach was developed in the natural sciences to study natural phenomena. The objective of qualitative research is to enable the researcher to understand the social and cultural context within which people live, this includes what they say and do. The researcher formulates an appreciation of the context through talking to people or reading what they have written to understand their thoughts and explain their actions. Qualitative researchers argue that qualitative research is the best option to choose if one wants to understand the people's motivations, reasons, actions and context for their beliefs in an in-depth way (Myers, 2009).

Klein and Myers (1999) state that in recent years, interpretive research has emerged as an important aspect in information systems research. Interpretive research can help IS researchers to understand human thought and action in social and organizational contexts; it has the potential to produce deep insights into information systems phenomena including the management of information systems and information systems development. According to Myers (1999) qualitative research methods involve the use of qualitative data such as interviews, documents and participants' observations to understand and explain the social phenomena. Examples of qualitative methods are action research, case study research and ethnography. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions and reactions (Myers, 1999)

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3.5 Research Paradigm/Philosophical Orientation

A research paradigm refers to a set way of regarding and understanding the world. One's world view in academic research significantly influences how one goes about observing and interpreting situations, behaviours and outcomes. According to Oates (2006), the different research paradigms have different views about the nature of physical and social reality (ontology) and the nature of knowledge and how it can be acquired (epistemology). The variations in perspective emanate from the different research paradigms such as positivism, interpretivism and critical research (Oates, 2006).

It is important for researchers to understand the grounds for their knowledge as it has profound influence on the validity and scope of the knowledge that they acquire (Myers, 2009).

3.5.1 Interpretive Research

The interpretive approach to organizational research maintains that the methods of natural science are inadequate for the study of social reality. This school of thought takes the position that people and the physical and social artefacts that they create, require a flexibility of countenance that is not permitted by the rigid measures of scientific modelling characteristic of positivist principles. Unlike atoms, molecules, and electrons, people create and attach their own meanings to the world around them and to the behaviour that they manifest in the world (Lee, 1991). According to Oates (2006), interpretive research in Information Systems (IS) and computing is concerned with the social context of information systems: the social processes by which it is developed and constructed by people and through which it influences, and is in turn influenced.

Interpretivism asserts that reality, as well as our knowledge thereof, are social products and hence incapable of being understood independent of the social actors (including the researchers) that construct and make sense of that reality. 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).

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Many social scientists claim that the social scientist does not stand as it were outside of the subject matter looking in; rather the only way he or she can understand a phenomenon is to look at it from the 'inside'. This means that the researcher must speak the same language as the people being studied in order to understand or translate what has been said. An interpretive researcher focuses on understanding the context of a phenomenon, contextualizes the situation and makes it what it is (Myers, 2009; Orlikowski and Baroudi, 1991).

Klein and Myers (1999) state that in recent years, interpretive research has emerged as an important aspect in information systems research. Interpretive research can help IS researchers to understand human thought and action in social and organizational contexts. It has the potential to produce deep insights into information systems phenomena including the management of information systems and information systems development (Klein and Myers, 1999)

3.5.2 Motivation for selecting the Interpretive approach

Based on the arguments above the interpretivist approach was considered appropriate for this study as it aimed to analyse the views of the different participants on the role of ICT usage as well as how it enables poverty reduction. The researcher sought to understand the phenomena by analysing the different meanings that the participants attach to their inter-subjective realities. The researcher set out to uncover the participant's social realities, how they perceive and interact with ICTs on a daily basis and the role of ICT on their socio economic statuses. It was envisaged that the interpretive approach would be best suited to illuminate the realities of the participants in more context. For instance, data gathering positioned the researcher worked for an inside' perspective by empathising and sharing in the social and political contexts of the participants (Myers, 2009).

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3.5.3 Critique against Interpretive Research

The section below summarises the critique against the interpretive research paradigm:

- The researcher's ability to understand the actors' interpretations may be limited by factors such as terms used by the actor which may have different meanings in a particular setting (Jones and Nandhakumar, 1997).
- The actors may provide a distorted view of their behaviour and knowledge due to various reasons, for example, their ideas of what ought to happen in a situation may be different to what actually goes on. Factors such as secrecy, privacy and failure may also cause the actors to deliberately mislead the researcher resulting in flawed research results (Jones and Nandhakumar, 1997).
- Actors may be unable to give an accurate account of their tacit knowledge that forms part of their daily routine (Jones and Nandhakumar, 1997).
- The researcher can interfere or intervene in the research context and can change research outcomes (Jones and Nandhakumar, 1997).
- Interpretive research does not always take into account external conditions that give rise to certain meanings and experiences (Orlikowski and Baroudi, 1991).
- Interpretive research does not address structural conflicts within society and organisations (Orlikowski and Baroudi, 1991).
- Interpretive research does not explain historical changes e.g. how a particular social order came into being and how it will evolve over time (Orlikowski and Baroudi, 1991).

In spite of all the critique against the interpretive research approach, it enables a better understanding of the inter-subjective meanings embedded in social life by in-depth examination of the phenomena as depicted in this research study.

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3.6 Research Strategy

A research strategy is a way of finding empirical data about the world. The research methods or strategies that are commonly used in business and management include, case study research, action research and ethnography (Myers, 2009). The research strategy followed in this study was a single case study with a business support organisation based in the Western Cape and ten interview based enquiries with SMMEs in Gauteng.

3.6.1 Case Study Research

There is no standard definition of a case study (Yin, 2003). A case study can be defined as an empirical enquiry that investigates a modern-day issue or event within its natural setting. Multiple methods of data collections are employed to gather information from the entities involved. The boundary between the issues or events and the context cannot be clearly defined at inception of the research study, and no experimental control or manipulation is used. During a case study research, the researcher may have less prior knowledge of what the variables of interest may be or how they will be measured (Yin, 2003, Benbasat et al., 1987).

A single case approach was conducted on this study with a business support organisation based in the Western Cape. Case study research is well suited to the interpretive stance that was adopted for this research project. Such design is particularly well suited to the challenge of answering how and why questions. The researcher is able to study the phenomena in its natural setting and gain depth of insight into practitioner contexts and motivations that can lead to the generation of theories from practice (Benbasat et al., 1987). Case study research also offers a broader understanding of the research phenomena and is hence particularly useful in situations where few previous studies have been undertaken and phenomena need to be explored (Benbasat et al., 1987; Yin, 1994; Lawrence, 2010; Orlikowski and Baroudi, 1991). In the case of this research study there is limited theoretical and empirical knowledge on the phenomena under investigation (Duncombe and Heeks, 2002; Makoza and Chigona, 2012) hence this research strategy was applied.

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A further valuable characteristic of the case study is that it is possible to extract valid perspective from a single case (Lee, 1989; Myers, 2009; Yin, 2003). This research project employed such technique by conducting a detailed investigation into a case that was specifically selected for its potential to yield a broader understanding of the research questions. Single case studies are appropriate when the intention is to formulate or extend theory and even in situations that have previously been inaccessible to scientific investigation (Yin, 1984).

Different epistemological and ontological stances can be adopted when using a case study approach (Myers, 2009). According to Walsham (1993), a case study approach is the most appropriate method for conducting interpretive, empirical research due to a number of reasons. Firstly, case studies allow the researcher to answer how and why questions. These questions enable the researcher to understand the nature and complexity of the processes involved (Benbasat et al., 1987).

In their empirical study to evaluate the appropriateness of performance management systems for SMEs Hudson et al. (2001), conducted semi structured interviews with managers of eight SMEs. In addition, the study conducted a case study to observe the participants in their natural settings in order eliminate ambiguities. This approach was found to have facilitated the identification of discrepancies between theoretical and empirical data. It also made it easier to identify key constraining issues and informed theory through the enhancement of the theoretical framework and improving practice (Hudson et al., 2001). Based on the advantages highlighted by Hudson et al. (2001), in addition to the data collected from the single case study from the business support organisation in the Western Cape, the author conducted in depth semi structured interviews with ten SMMEs based in Gauteng.

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3.6.2 Critique of Case Study Research

Despite the popularity of case study research by IS researchers, it has been subjected to numerous criticisms including the following:

- The researcher that conducts a case study in a business setting can find it difficult to gain access to companies required to participate in the research. The reason for this is that companies may be sceptical of the value of the research or be concerned that the researcher will take up their time in the interviews (Myers, 2013).
- When conducting a case study, the researcher does not have control over the situation for example if the key participant resigns prior to the completion of the interviews, the researcher will find it difficult to continue with the research (Myers, 2013). Case study research can be difficult for young and inexperienced researchers to focus on the most important issues that are relevant to the study. This may lead the researcher to end up with large amounts of data that is of little use during the final analysis phase (Myers, 2013).
- Case study research is time consuming; it takes a long time to gain access to study participants, to conduct empirical research and to complete the write-up (Myers, 2013).
- One of the concerns raised against case study research is the lack of rigor. In many instances researchers do not follow procedure or demonstrate biased views to influence the direction of the findings and conclusions (Yin, 2003).

In spite of the criticism against case study research discussed above, this research method has commanded respect and been widely adopted in information systems research (Dube and Pare, 2003).

The next section presents how triangulation was applied in this study.

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3.6.3 Triangulation

According to Kennedy (2009), all research methods have their advantages and disadvantages. Challenges often come about when researchers rely on using just one research method. The concept of triangulation also known as mixed method comes into play by enabling researchers to combine several research methods to study one thing (Kennedy, 2009; Olsen, 2004). Cohen and Manion (2000), define triangulation as a way of mapping out or explain more fully the richness and complexity of human behaviour by studying it from more than one standpoint. Modell (2009) further defines triangulation as the mixing of multiple theories, methods, data sources and or researchers with the aim of enhancing the validity of the research findings. Triangulation enables the researchers to eliminate bias in the study by integrating different theories, methods, data sources and researchers with complementary strengths and non-overlapping weaknesses (Modell, 2009). Triangulation also provides a balanced view on the research that gives a richer version of account (Kennedy, 2009).

More arguments that are put forward in literature to justify the use of triangulation include its ability to increase persuasiveness of evidence; how it elaborates understanding and confirms the accuracy of data (Downward and Mearman, 2007). The types of triangulation are shown in Table 13.

Table 13: Types of triangulation. Source (Downward and Mearman, 2007)

Type of Triangulation	Description
1. Data triangulation	Involves gathering data at different times and situations from different subjects. Different data sources and types are used in the process e.g. surveys may be used alongside interviews
2. Investigator triangulation	Involves more than one field researcher to collect and analyse data relevant to a specific research object.
3. Theoretical triangulation	Involves making use of more than one theoretical tradition to analyse data.
4. Methodological triangulation	Involves the combination of different research methods. There are two forms of methodological triangulation: • Within method triangulation involves making use of different varieties of the same method

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Type of Triangulation	Description
	• Between method triangulation involves making use of different methods such as qualitative and quantitative methods in combination

Kennedy (2009), states that triangulation can help researchers eliminate the following types of bias:

- Measurement bias – Measurement bias is caused by the way in which the researcher collects the data. The way in which the researcher collects data can be influenced by the settings in which the research is conducted e.g. peer pressure in focus group participants. In this example triangulation will allow the researcher to combine individual and group research methods to reduce bias. Another form of bias that is linked to measurement bias is known as response bias. This form of bias takes place when the participants tend to tell the researcher what he or she wants to hear. A triangulated approach to address this form of bias will entail combining self-reported and observational research methods (Kennedy, 2009).
- Sampling bias – Sampling bias occurs when the researcher does not cover all the population (omission bias) or covers only some parts of the population because it is more convenient (inclusion bias). Certain research methods are make it easier for the researcher to reach certain parts of the population e.g. telephonic interviews can make it easier for a researcher to reach participants in geographically dispersed locations as compared to face to face interviews.

  The use of triangulation combines the different strengths of the data collection methods to ensure sufficient coverage (Kennedy, 2009).
- Procedural bias – Procedural bias occurs when the participants are put under pressure to provide feedback which might impact the type of answers they provide. Some users may rush to complete an online survey property as they rush their answers to get the end.

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Triangulation allows researcher to combine short engagements with longer engagements where participants have more time to provide well considered responses (Kennedy, 2009). In qualitative research it is best practice for researchers to acknowledge bias and preconception as well as their impact in the study. Failure to recognise bias results in bias know as design bias (Kennedy, 2009).

3.6.3.1 Guidelines for Conducting Triangulation

Downward and Mearman (2007) argue that one should combine methods on typically pragmatic grounds. Bryman (2004) adds that methods can be mixed, but one method will always assume a primacy over others. The application of triangulation is questioned by some authors. Blaikie (1991) argues that triangulation has no conception of cross checking observations to produce a more accurate picture or balancing alternative points of view that may be motivated by the examination of different phenomena. One of the most controversial element of triangulation is methodological triangulation specifically combining qualitative and quantitative methods (Downward and Mearman, 2007). Olsen (2004), examined mixed method triangulation and indicated the existence of an epistemological chasm between qualitative and quantitative research methods. This argument draws upon the work of Walby (2001) who argues that these chasms have an interdisciplinary basis but are hard to justify philosophically. Downward and Mearman (2007) argue that the epistemological chasm can be viewed as justifiable and consistent with specific ontological viewpoints. An examination of ontology is essential to explore the basis upon which methods can be mixed (Downward and Mearman, 2007).

Kennedy (2009) proposes the following guidelines for conducting triangulation.

- Mix up different research techniques: This methods entails combining different techniques in the study that balance each other out e.g. qualitative vs quantitative, face to face interviews vs. remote interviews, short engagements vs long engagements etc. (Kennedy, 2009).

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- Select the right tool for the right job: It is important for the researcher to know what each research tool is good for and ask relevant questions that are appropriate for the selected tool (Kennedy, 2009). Secondly, two people are better than one. Triangulation can be achieved by having two people conducting the research. The two researchers can help each other in terms of making observations, taking notes and analysing the data. The two researchers can balance each other out by providing different perspectives on what they are seeing and hearing (Kennedy, 2009).
- Conduct research in various layers: Triangulation can be achieved by going through the research in various layers of detail. The researcher can start with investigating the broad top level issues, the next scope of the research can entail low level issues that require more detail (Kennedy, 2009).
- Set up a feedback loop: The validation of feedback findings needs to be an ongoing process during a research study. This may help flesh out issues that have already popped out. This process could enable a researcher to adapt the interview approach as the more interviews get conducted or a small sample size can be used to validate findings gathered from a survey on a large sample size (Kennedy, 2009).
- Be reflective: The researcher's emotional state on any given day has an impact on how research gets conducted. The researcher needs to look out for preconceptions that might exist and summarise them accordingly in the findings along with the bias that had an effect on the research study (Kennedy, 2009).
- Re-visit participants: The researcher can get good results by visiting the same people at multiple times during the research study. The longer the engagements with these individuals allows the researcher to see their goals, attitudes and behaviours change over time (Kennedy, 2009).

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3.6.3.2 Application of Triangulation in this study

Triangulation cuts across the qualitative and quantitative divides. It allows the researcher to use different types of techniques to get access to different facets of the same social phenomena (Olsen, 2004). Triangulation was applied in this study in order to explore and improve the knowledge on the research phenomena. The researcher adopted the constructionist view point of triangulation. According to Burr (1995) and Olsen (2004) the definition and visibility of social objects in the constructionist approach depend on the lenses that we wear when viewing them as well as the assumptions and epistemology adopted by the researchers. Triangulation was applied in this study in four ways. Firstly, ANT and SL framework were used as a theoretical lens in the research project. Secondly, method pluralism was achieved through semi-structured interviews conducted with ten SMMEs in Gauteng and a single case study with an organisation that supports entrepreneurs in the Western Cape. Finally, the thematically analysed research findings from the study were used as input for constructing a conceptual framework that explains the role and impact of ICT usage by SMMEs on poverty reduction.

3.6.4 The Role of the Researcher

A researcher is an important part of the research study. Unlike positivism where direct influence of the researcher has to be systematically contained and there is no role for values (Ponterrotto, 2005). Interpretive researchers must fulfil the difficult task of accessing the participants' interpretations, filtering and communicating a version of events back to others.

As Orlikowski and Baroudi (1991) suggest, all researchers regardless of the research paradigm need to reflect on their personal perspectives as they examine the phenomena under study. This requires that the interpretive researcher have a clear view of their stance. According to Walsham (1995), there are two roles of the researchers that can be identified namely that of an outside observer and that of an involved researcher. In this research project, the researcher was an outside observer that engaged with various SMMEs to gather their views on their interactions with ICTs and assessed the impact on their livelihoods.

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The main advantage of the outside observer role is that the participants are often open to express their views, provided a rapport of trust can be established. A disadvantage of the outside observer role is that the researcher will not be present on many occasions to fully understand the organisation from the inside. In addition, the researcher may not be granted access to certain data deemed sensitive or confidential to be shared with outsiders (Walsham, 1995).

Oltmann and Boughey (2012), offer a few questions for the researcher to keep in mind during the study. These questions include: what are the research question, who is asking the research questions, what is the relationship between the person asking the research questions and the ontology (Oltmann and Boughey, 2012). The researcher herein reflected on these questions throughout the research process.

The next section discusses data collection methods used in the study.

3.7 Data Collection Techniques

Multiple data collection methods can be employed in research. Similarly, a number of sources of evidence work well to capture a diversity of data. These include written documentation such as newspaper clips and formal reports; archival reports such as organisational charts and reports; direct observations through noting and observing details and actions of the field environment. Structured or open ended interviews with the study participants as well as physical artefacts such as devices, outputs and tools also contribute to essential data gathering (Yin, 1994). The main objective for deliberating and selecting an appropriate data collection method is to collect a rich set of data surrounding the research issue, as well as capturing the contextual complexity (Benbasat et al., 1987). The data collection methods used in this study include:

- Secondary data in the form of written documentation and archival reports such as organisational structures, organisational strategies and financial reports were sourced from organisation's websites or directly from the business owners. This data was collected from the SMMEs that participated in the interviews and case study enquiry.

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- Observations were made at the various sites and notes were made during the enquiry with all the SMMEs that participated in the study.
- Semi-structured interviews were conducted with the various study participants to gather their view points on the subject under investigation. With respect to interpretive case studies, interviews are viewed as the primary data source. Interviews enable the researcher to access interpretations that participants have regarding the actions and events that are taking place. Interviews allow the researcher to capture and analyse the participant's views and aspirations in more detail (Walsham, 1995).

The next section discusses interviews as the data collection method used during this this study for the single case enquiry as well as with the ten SMMEs based in Gauteng.

3.7.1 Interviews

Interviews are one of the most important and widely used data gathering techniques in qualitative research. Interviews enable the researcher to gather rich data from people in various roles and situations. Myers and Newman (2007, p3) indicate that "interviews are like night vision goggles, permitting us to see that which is not ordinarily on view and examine that which is looked at but seldom seen". Semi-structured interviews were scheduled and conducted with ten owners of SMMEs based in Gauteng and the director of a business support organisation in the Western Cape. The objective of the interviews was to get an understanding of the participants' diverse views on the role of ICTs in their organisations and how it can be used as a tool for reducing poverty. According to Baily (1978), interviews have a number of advantages and disadvantages. The advantages include direct access to the respondent to probe and by so doing, generate deeper insights allowing hidden concepts to emerge. The face to face interaction afforded by the interview structure allows the researcher to establish rapport making it easier for respondents to express their thoughts during an interview. Often, the quality of the response is improved as the discussion and engagement deepens and the researcher is able to align the order of questions with the interviewee's chain of thoughts. Face to face interviews also make it possible for the interviewee to capture supporting data by observing non-verbal reactions from the participants (Myers, 2009; Baily, 1978)

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Disadvantages of Interviews include the fact that they can be costly especially if they involve significant amounts of travel to participants' sites. Frequently it takes a long time to secure, prepare and conduct an interviews with process being further exacerbated by challenges in gaining access to the right people as target respondents are often unwilling to participate or unable to align with the interview schedule leading to some interviewees having to be omitted. The interviewer can lead the interviewee to understand and answer questions in a particular context. In some cases, the interviewer may fail to understand that the interviewee does not understand a particular question. External factors such as race, sex, class physical appearance and age amongst others can impact the interpersonal interaction between the interviewer and the interviewee as well as the atmosphere of the interview thus affecting the rapport and making interaction difficult (Myers, 2009, Baily, 1978).

The semi-structured type of qualitative interviews is commonly used in business and management (Myers, 2009). Semi- structured interviews involve the use of pre-formulated questions although the researcher retains flexibility and does not have to strictly adhere to the pre-scripted direction. New questions might emerge during the conversation and this approach allows for improvisation (Myers, 2009).

Semi-structure interviews allow the interviewees to add important insights as they arise during the course of the conversation (Myers, 2009). Semi-structured interviews were conducted in this study and as part of the interview process. The use of semi structured interviews was found to be beneficial, it enabled the interviewees to be probed for more context of clarification where required. During the interview process, the researcher was able to adapt the questions as the discussion progressed. An interviewing guide (Appendix C) was used during the interview process. The scope of the interview guide was guided by the research questions.

The interview questions were piloted with two SMMEs. This process assisted in testing the discussion tool leading to the reframing of questions that were not clear to the study participants. Prior to the scheduled interviews, the researcher used secondary to learn more about the histories of the companies.

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This also assisted in providing an understanding of the companies and its workings. The discussions during the interviews were captured in a note book by the researcher with the permission of the participants. Note taking during the interviews enabled the researcher to capture important concepts for analysis. After documenting the interview notes the researcher confirmed the answers with the participants in order to ensure correctness of the feedback captured, as suggested by Jones and Nandhakumar (1997). By continuously reflecting on transcripts and research notes, the author was able to effect improvements in questioning technique as the interviewing process unfolded.

The data collection process for this study was applied in an iterative manner. This ensured richer and deeper interpretation of the research phenomena. The researcher did not continue with data collection when nothing new was discovered from the interviews. The data collection involved several field trips to the study participants in order to capture more data or request clarification where necessary.

3.7.2 Population and Sampling Unit

The population for this project comprises of SMME owners from various business sectors including retail, business services, construction, manufacturing, transportation and agriculture. The justification for selecting SMMEs as the unit of analysis for the study is due to their socio-economic development potential such as employment creation, income generation and poverty reduction. The classification used for defining SMMEs is consistent with the definition of small businesses used in South Africa as discussed in Chapter 1 (Table 1).

The sample of SMMEs that participated in this study were chosen from various business sectors in order to get diverse views that are sector independent. The businesses that participated in the study were from the formal and informal sectors. The business sectors selected for the study are regarded as those that have a potential for growth stimulation and employment creation as outlined in the National Development plan (National Planning Commission, 2011).

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This study bases its industry sector breakdown on the Standard Industrial Classification (SIC) codes used internationally and by most South African statutory bodies depicted in Table 14. The selection of the study participants ensured a spread of respondents across various industry sectors.

SIC Industry Title and Code	SME Category
Division A. - Agriculture, forestry & fishing (01-09)	Agriculture
Division B. - Mining (10-14)	Other
Division C. - Construction (15-17)	Other
Division D. - Manufacturing (20-39)	
Food and tobacco (20-21)	Manufacturing
Textile and apparel (22-23)	Manufacturing
Lumber, wood and furniture (24-25)	Manufacturing
Papers & allied products (26)	Manufacturing
Printing and publishing (27)	Other
Chemicals, petroleum, rubber (28-30)	Manufacturing
Leather, stone, clay and glass (31-32)	Manufacturing
Metal industries and products (33-34)	Manufacturing
Industrial, electronic and transportation equipment and other instruments (35-38)	Manufacturing
Miscellaneous manufacturing industries (39)	Manufacturing
Division E. - Transportation & pub. utilities (40-49)	
Transportation (40-47)	Transportation
Communication and broadcasting (48)	Communication
Electric, gas & sanitary services (49)	Government/Public
Division F. - Wholesale trade (50-51)	
Wholesale trade - durable goods (50)	Other
Wholesale trade - nondurable goods (51)	Other
Division G. - Retail trade (52-59)	Other
Division H. - Finance, insurance & real estate (60-67)	Financial Services
Division I. - Services (70-89)	
Hotels and accommodation (70)	Tourism
Personal Services (72)	Other
Business Services (advertising) (7310)	Professional Services
Business Services (general) (7320-7350)	Professional Services
Business Services (employment) (7361)	Professional Services
Business Services (computers) (7370)	IT
Business Services (other) (7380-7800)	Professional Services
Services-Health Services (80)	Health
Services-Legal Services (81)	Professional Services
Services-Educational Services (82)	Education
Services-Social Services (83)	Other
Services-Membership organisations (86)	Other
Services-Engineering (8711)	Professional Services
Services-Accounting (872)	Financial Services
Services-Management (8740)	Professional Services
Division J. - Government services (91-97)	Government/Public
Division K. – Non-classifiable establishments (99)	Other

Table 14: Standard Industrial Classification Codes. Source: (Goldstuck, 2014)

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3.7.3 Sampling Method

As applied in a similar study conducted by Makoza and Chigona (2012), a combination of snowballing and purposeful sampling techniques were used to select the study participants. In accordance with the snowballing technique the author used the social network to acquire a list of potential contacts (Atkinson and Flint, 2001). The author validated the list of referrals to select the sample based on the objectives of the study (Papadopoulos, 2000).

The principles of adequacy and completeness were applied during sample selection. The study participants consisted of SMME owners from various industry sectors, varying business sizes, different stages of growth and with various interactions with the phenomena of interest (Yin, 1994; Penrod et al., 2003; Papadopoulos, 2000). Eleven SMMEs participated in this research study. The details of the SMMEs are shown in Table 14 in no significant order.

Table 15: Summary of SMMEs examined in this research project. Source (compiled by author)

SMMEs	Enterprise Size	Industry Sector	Interviewee	Established
SMME_A_Business Consulting	Micro	Business Services	Director	2015
SMME_B_Marketing Consulting	Micro	Business Services	Director	2012
SMME_C_Spaza	Micro	Retail	Owner	2013
SMME_D_Bakery	Micro	Manufacturing	Director	2006
SMME_E_Poweline	Medium	Construction	Managing Director	2011
SMME_F_Pizza	Medium	Retail	Director	2011
SMME_G_Land Surveying	Small	Construction	Director	2006
SMME_H_Farm	Small	Agriculture	Director	2013
SMME_I_Carwash	Small	Retail	Director	2014
SMME_J_ImageCoaching	Micro	Personal Services	Director	2012
SMME_K_MobileShop	Small	Retail	Director	2016

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3.8 Data Analysis

3.8.1 Introduction

The objectives of qualitative data analysis are to enable the researcher to focus on the most important aspects of the data, transform the data into useful insights for the researcher and the intended audience to explain and understand the subject at hand. According to Myers (2009), the qualitative data analysis approaches help answer a number of questions to explore what the data means; the main themes that emerged and how the data contributes to knowledge in the field.

The data captured from the study participants was analysed using a thematic analysis process as suggested by (Braun and Clarke, 2006). Thematic analysis is a method for "identifying, analysing and reporting patterns (themes) within data" (Braun and Clarke, 2006, p.79). Furthermore, thematic analysis organises and describes data in rich detail and interprets various aspects of the research topic (Boyatzis, 1998). The use of a data analysis method makes it easy to evaluate the research and to compare and or synthesise it with other studies conducted on the same topic (Attride-Stirling, 2001). This argument therefore makes it vital for the researcher to provide more clarity on the process and method that was used in this study.

Thematic analysis differs from other analytic methods that seek to describe patterns across qualitative data such as grounded theory (Corbin and Strauss, 1990), thematic decomposition analysis (Braun and Clarke, 2006) and interpretative phenomenological analysis (Biggerstaff and Thompson, 2008). Grounded theory and IPA seek patterns in the data and they are also bounded in theory. IPA is bound on an epistemology that gives primacy to understanding people's everyday experience and reality in order to gain an understanding of the phenomena in question (McLeod, 2001). On the other hand, grounded theory analysis aims to generate a plausible and useful theory of the phenomena that is grounded in data (McLeod, 2001). Thematic DA identifies patterns (themes, stories) within data and theorises language as constitutive of meaning and meaning as social (Braun and Clarke, 2006).

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A similarity shared by the different data analysis methods is the search for certain themes or patterns across an entire data set, rather than within a data item (Murray, 2003). Thematic analysis does not require the researcher to have a detailed technological and theoretical knowledge of approaches, such as grounded theory and DA. Thematic analysis can be a method that is used to reflect reality and to unpick and unravel the surface of reality (Braun and Clarke, 2006). Thematic analysis was selected due to the advantages that it brought to this research as highlighted by Braun and Clarke (2006). Firstly, thematic analysis is not linked to any pre-existing theoretical framework. The flexibility of this approach enables it to be to be used within different theoretical frameworks, epistemologies and research questions. Secondly, it is useful for summarising large data sets and can generate rich insights and thirdly as a method, it is relatively easy to learn and execute. Braun and Clarke (2006) highlighted a key disadvantage of the approach being that it has limited interpretative power beyond mere description if it is not used within an existing theoretical framework that anchors the analytic claims that are made.

A deductive or theoretical approach was selected due to the researcher's theoretical interests in analysing the phenomena. Actor-Network Theory (ANT) and the Sustainable Livelihood framework were further used to guide the analysis of data collected from the single case study and semi-structured interviews conducted with the study participants (Callon, 1991; Duncombe, 2007; Makoza and Chigona, 2012). This study followed the thematic analysis process (refer to Table 16) as developed by Braun and Clarke (2006). The SL framework and ANT were further applied in conjunction with thematic analysis approach to analyse the empirical data for this study.

Table 16: Thematic Analysis Phases. Source (Braun and Clarke, 2006)

Phase	Description
Phase1: Familiarising with data	Sourcing relevant data on the SMMEs on their websites prior to the scheduled meetings Transcribing the data and confirming its correctness with the respondents Reading the data set repeatedly to identify meanings and patterns
Phase 2: Generating initial codes	Coding the data and organising related codes
Phase 3: Searching for themes	Grouping related codes into themes

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Phase	Description
Phase 4: Reviewing themes	Ongoing analysis and refinement of the themes
Phase 5: Producing the report	Selection of vivid compelling extracts Analysis of the selected extracts Relating back of the analysis to the research questions and literature Discuss and synthesise the findings

Data analysis is not a linear process of moving from one phase to the next. Instead, it is a recursive process where movement is back and forth as needed throughout the process. The process also develops over time and should not be rushed (Ely et al., 1997).

3.8.2. Evaluating Thematic Analysis

One of the perceptions cited by the critics of qualitative research is that 'anything goes'. As with quantitative analysis, qualitative research also does have methods of analysis that should be applied rigorously to the data. Furthermore, the criteria for conducting good qualitative research data collection and analysis do exist (Parker, 2004; Elliott at al., 1999).

Given the flexibility of thematic analysis, it is important for the researcher to be clear and explicit about the work being conducted. The analysis needs to align to the objectives of the research. The theory and method need to be rigorously applied. Rigour lies on developing a systematic method whose assumptions are congruent with the way one conceptualises the subject matter (Reicher and Taylor, 2005). Braun and Clarke (2006) suggest the use of the checklist in Table 17 for evaluating a good thematic analysis. The author applied this checklist during the data analysis process.

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Table 17: Thematic Analysis Evaluation Checklist. Source (Braun and Clarke, 2006)

No	Process	Criteria
1	Transcription	The data has been transcribed to an appropriate level of detail and the transcript have been verified for accuracy
2	Coding	Each data item has been given the same level of attention in the coding process
3		The coding process has been thorough, inclusive and comprehensive
4		All the relevant extracts for the themes have been collated
5		Themes have been verified against the original data set
6		Themes are internally coherent, consistent and distinctive
7	Analysis	Data have been analysed, interpreted, made sense of rather than just paraphrased and described
8		Analysis and data match each other. The extracts match the analytic claims
9		Analysis tells a convincing and well-organised story about the data and topic
10		A good balance exists between the analytic narrative and illustrative extracts
11	Overall	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase
12	Written report	The assumptions about and specific approach to thematic analysis are clearly explained
13		The transcribed method and reported analysis are consistent
14		The language and concepts used in the report are consistent with the epistemological position of the analysis
15		The researcher is active in the research process; themes do not just emerge

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3.8.3 Data Analysis Software

Data analysis software can be used to help researchers with the analysis of qualitative data. Making notes in the field, writing up or transcribing field notes. The software supports the storing of text data in an organised manner in a database. User interfaces enable the researcher to code the data by attaching key words or tags to certain segments of text to enable later retrieval. Once categorised, data can then be linked to form relationships and clusters leading to interpretations by drawing conclusions and testing the findings. Emerging conclusions can be displayed in an organised format including graphical mappings. Modern scholars recommend the use of a qualitative data analysis software for researchers that need research methods that ease the process of fragmenting large volumes of data search and retrieve text. The qualitative data analysis software makes the process quicker and easier (Myers, 2013). The Atlas.ti data analysis software was used for processing empirical data for this study.

3.9 Quality of the research

The quality of the research design is an important element that determines the acceptance of its outcomes. The following criteria may be used to assess the validity of a research study i.e. internal validity, construct validity, external validity and reliability (Yin, 2003; Brynard and Hanekom, 2006). Morse at al. (2002) adds that every research project needs to pay attention to matters of validity and reliability for it to contribute to the body of knowledge.

Internal validity also known as logical validity refers to the causal relationship between variables and results. The important aspect on internal validity is how the researcher argues for and the logical reasoning behind the research conclusions. The following measures have been proposed to enhance internal validity i.e. formulating a clear research framework, comparing empirically observed data with data established in previous studies and using the theory of triangulation to establish to verify findings by adopting multiple perspectives (Gibbert et al., 2008). External validity or generalizability is grounded in the belief that theories must be shown to account for the phenomena not only in the setting in which they are studied but also in other settings. External validity focuses on the applicability of the conclusions to similar problems found elsewhere

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(Gibbert et al., 2008). Construct validity refers to the extent to which a study investigates what it claims to investigate. It focuses on the extent to which the measurement technique uncovers the information it was meant to uncover and how the concepts of the study are operationalised (Gibbert et al., 2008). Finally, reliability refers to the consistency and reliability of measures. Reliability aims to enable subsequent researchers to arrive at the same insights if they conduct the study along the same steps again (Gibbert et al., 2008). The researcher addressed validity and reliability in the following manner:

- Internal validity: A research framework used in the study was derived from literature. The author conducted a detailed write up of the interview notes after each session. The interview notes were verified with the interviewees for correctness. Multiple data analysis methods were applied on the empirical data in order to gain a better understanding of the research phenomena. The discussion on the key themes from the research findings was compared to data from previous studies.
- External validity: In order to enhance generalizability, data was collected from various SMMEs that belong to different industry sectors. The report provides details regarding the context of the study as well as that of the participants in order to enable other researchers to see how the study compares to and how it may be applied to their context.
- Construct validity: The theory of triangulation was applied in the study to reduce bias. The interview guide was designed based on the key themes defined on previous studies which investigated a similar phenomenon.
- Reliability: The interviews were conducted by the same researcher hence a similar approach was applied. The interview notes were transcribed and confirmed with all the study participants to ensure accuracy of the information.

The next section discusses the ethical considerations relating to the research project.

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3.10 Ethical Considerations

The following areas were considered relating to the ethical aspects of this study i.e. informed consent, protection from harm and the right to privacy. As stated by Hankinson et al. (2007), the principle of informed consent is an important element for research studies. When the respondents were introduced to the research, they were asked to sign a consent letter that provided background information detailing the objectives of the study (Appendix A). The respondents were assured that their participation was voluntary and they could stop participating at any point without incurring any negative consequences. Further to this, assurance was given that their data would be handled with confidence and their information would remain anonymous in the entire process of analysing and documenting the findings. Lastly, it was highlighted to the respondents that the results of the study will be used for the research publication. The researcher was granted permission by the Ethics Committee prior to commencing interviews with the respondents, ethic approval is depicted in Appendix B.

3.11 Concluding Summary

ANT and the SL framework were presented as the appropriate theories for this study.

An interpretive research approach was followed understand the views of the SMMEs on the role and impact of ICTs towards the reduction of poverty. A theoretical overview of the case study research was discussed in this Chapter. The researcher presented the motivation for conducting a single case research and ten semi-structured interviews with the study participants. Various data collection techniques including semi structured interviews, observations and documentation were presented by the researcher. The thematic data analysis method, SL framework, ANT as well as Atlas ti were selected as the appropriate data analysis methods. This research project uses triangulation to enhance the accuracy and description of the research phenomena. A summary of the research approach and design is presented in Table 18.

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Table 18: Ssummary of research approach, design decisions and final product. Source (compiled by author)

Aspect	Decision
Research Approach/Epistemology	Interpretivism
Theoretical Underpinning	Actor-Network Theory Sustainable Livelihood Framework
Research strategy	Single Case study with a business support organisation based in the Western cape. Ten semi structured interviews with SMMEs based in Gauteng.
Data collection Techniques	Semi-structured face to face interviews, document analysis, observations.
Data analysis	Thematic Analysis Method Actor-Network Theory Sustainable Livelihood Framework Data analysis software: Atlas.ti tool
Enhance accuracy and description of research phenomenon (interpretive nature).	Triangulation through using multiple data methods for data collection and analysis.
Final research product.	A conceptual framework that describes the role of ICT usage by SMMEs on poverty reduction that is informed by empirical and theoretical data

The discussion in this Chapter articulates how the empirical study was conducted with the study participants. The approach and design of the study is aligned to the research objectives and aims to gather data that provides a better understanding of the SMME's views on how they use ICTs and the impact on their livelihoods.

The next Chapter presents the empirical data that was collected from all the SMMEs that participated in the study.

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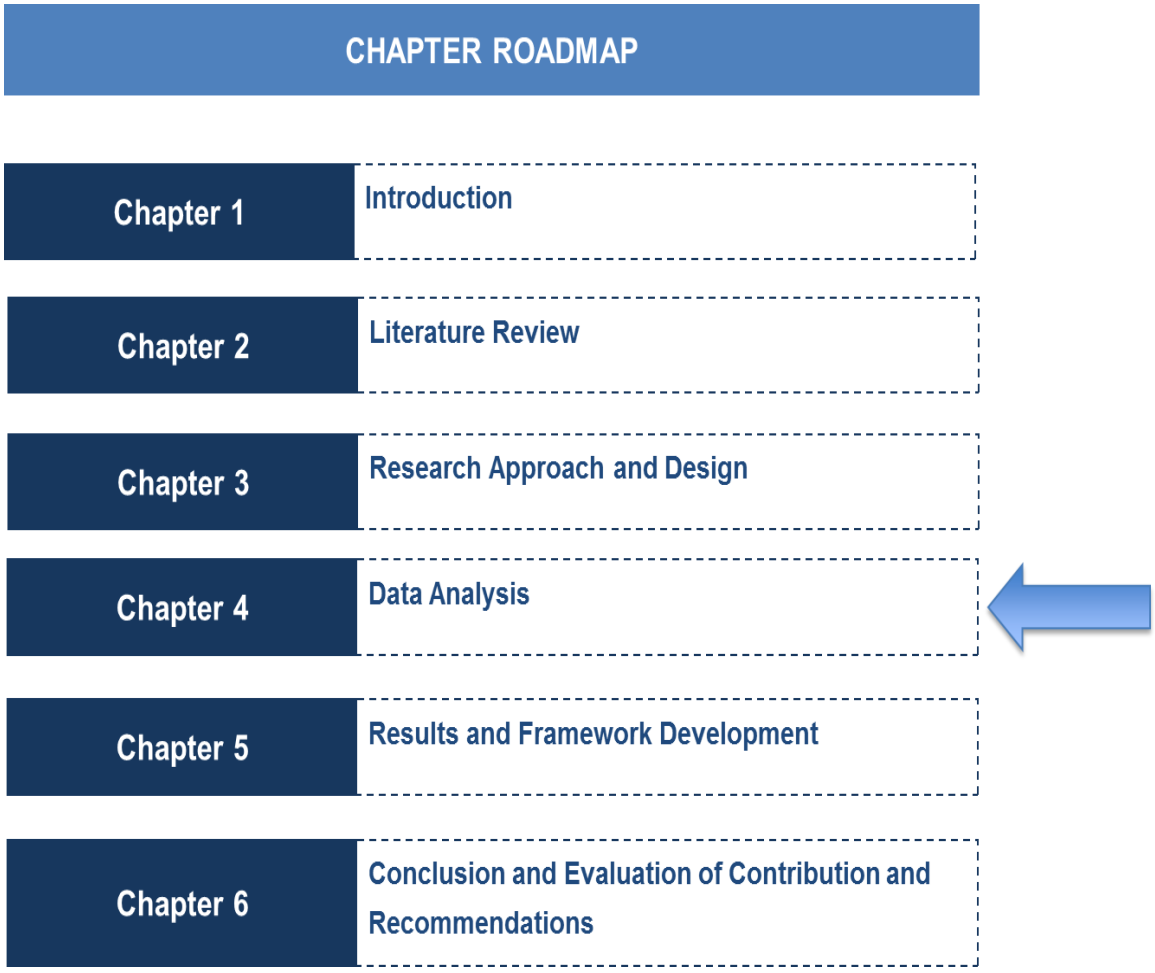
Chapter 4: Data Analysis



4.1 Introduction

This Chapter presents the data that was collected through semi-structure interviews held with ten SMMEs at their business premises in Gauteng. In addition, a single case study was conducted on an eleventh organisation based in the Western Cape in a bid to deepen perspective on the role and impact of ICT use within an SMME context. The first section of the Chapter presents an analysis of the organisations that participated in the study. This section plays an important role in understanding and interpreting the research data collected from the study participants. The next section presents the research results as a consolidated analysis of the data from all the organisations that participated in the study.

4.2 Background and Description of the SMMEs

The background and description of the SMMEs is presented using the research construct of (Lamb and Kling, 2003; Fink and Disterer, 2006) for giving background on the research participants.

4.2.1 SMME_A: Business Consulting

- Overview: This business consulting organisation was formed in 2015. It is headed by one director who runs the organisation on a full time basis. The firm offers business consulting and collateral management services. The business consulting services include financial analysis, budgeting, financial modelling, market research and feasibility studies. The collateral management services include stock taking, monitoring and stock inspection services. The director is the only full time employee, resources are employed on a contractual basis as and when a business need arises. Currently there are five resources who are working on a six months' contract. The organisation operates from an office park in Johannesburg. The clients that the company offers its business consulting services to are mostly small, micro organisations and municipalities from various sectors of the industry. The organisation offers it collateral management services to one of the major Banks in South Africa.

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- Company Strategies: The vision for the organisation is to be recognized as the most effective and professional business consulting company in the country. In delivering its vision the company strives to provide superior quality professional services to clients and to ensure that solutions tackle problems that clients are struggling with.
- Organisational Classification: The business consulting business is a micro organisation that employs one full time employee. The five contracting resources employed in the business consist of an administrator, business consultants and collateral management agents. The industry classification for this business is business consulting services.
- Internal interactions: Internal company interactions are conducted via email and mobile phone. WhatsApp is the most frequently used form of communication especially with the staff when they are at client sites.
- External interactions: There are various ways that the organisations uses for communicating with clients, these include formal and informal meetings, email, telephone, mobile and social media (Facebook, WhatsApp). The clients are located in Johannesburg, Centurion and Kwazulu Natal.
- Company affiliations: The organisation is registered with the following entities: Companies and Intellectual Property Commission (CIPC), the institute of business accountants and the South African Revenue Services (SARS).
- Company identity: The organisation has a professional, relaxed and high performing culture. The staff complement of the organisation is diverse and represents the demographics of the country. The organisation is a learning organisation which promotes creativity and does not restrict employees to be bound by bureaucratic processes that impede delivery.

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4.2.2 SMME_B: Marketing Consulting

- Overview: The marketing consulting business was established in 2012. The business provides services in graphic design, website design and hosting, branding, events management, communications, printing and application development. The business operates in residential premises at a township known as Katlehong in the east of Johannesburg. The business offers its services to small and micro enterprises ranging from start-ups to established businesses. The local municipality is one of the clients that the organisation has a long term contract with.
- Company Strategies: The vision for the organisation is to create an environment for small businesses to identify their potential through the various service offerings that are delivered. In 2017 the business plans to expand by diversify its service offering and merging with an established business in the same industry.
- Organisational Classification: The business is classified as a micro enterprise. The company is classified under the business services sector. The marketing company employs one full time employee (owner) and two free-lance employees (graphic designer and outdoor advertiser). The free- lance resources are called in when the owner requires additional capacity to deliver on client requests.
- Internal interactions: Internal interactions with staff occur mainly using the mobile phone. The owner regards WhatsApp as the cheapest form of communication hence it is frequently used in the in the business.
- External interactions: The organisation interacts with clients in various ways, these include face to face meetings, email, mobile phone, Skype, and social media platforms including Facebook, Instagram and Twitter.
- Company affiliations: The organisation is affiliated with non-profit organisations in Ekurhuleni. The organisation is registered with CIPS and pays taxes to SARS on an annual basis.

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- Company identity: The business encourages a culture of innovation and continuous learning. The value system is based on respect, professionalism, trust, integrity and good business ethics. The business does not look at profit as a motivator, it gives back to the community by reaching out to non-profit organisations and enables them to realise their goals by rendering services to them for free.

4.2.3 SMME_C: Spaza Shop

- Overview: The spaza shop was set up by the owner in 2013. The reason for setting up the business was to assist the local community that did not have a place to buy their day to day necessities in close proximity. The second reason for starting the business was to create employment opportunities for the owner's brother who had been retrenched and other unemployed members of the community. The business is located in Soweto, Johannesburg. Two years after the business was opened, two new competing shops were set up in the same street selling similar goods and services. The spaza shop sells convenient goods such as groceries, airtime, data and also facilitates the payment of DSTV subscriptions. The shop is located at the corner of a busy street next to a bus stop and a taxi rank. This makes it accessible to people travelling on public transport, children going to school as well as local residents. The shop owner has a full time job; he runs the business on a part time basis with the help of three employees who work on a full time basis. The shop owner rents the premises from a local business person and has intentions of buying the property on expiry of the current lease agreement.
- Company Strategies: The main objective of the business is to create convenience and accessibility of basic amenities to the local community. The business owner's vision is to buy the business premises that the shop is operating from, renovate the current structure and expand the service offering. The plans are to set up a car wash and open a restaurant that serves local cuisine. The business does not have formally documented strategies and plans, the plans are only known by the owner and have not been shared with anyone.

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- Organisational Classification: The spaza shop is a micro enterprise operating in the informal sector. The industry sector classification for this business is the retail sector. The business employs three full time employees. The roles fulfilled by the employees comprise of the shop manager who is the owner's brother and two employees whose main responsibilities are to assist customers when they walk in, package the merchandise and cleaning the premises. The shop manager orders stock, operates the till, conducts stock taking and makes cash deposits at the bank on a daily basis.
- Internal interactions: The business owner holds face to face meetings with the shop employees on Saturday mornings. The objective of the meetings is to go through weekly sales and address all matters that require the owner's involvement. On a daily basis the owner interacts with the employees using the mobile phone. The daily communication with staff is conducted on a WhatsApp group that is administered by the owner. During these interactions the staff members provide feedback on daily sales figures, total cash deposited at the bank as well as the orders placed with suppliers.
- External interactions: The shop manager drives to various suppliers on a daily basis to replenish stock. The orders for bread and soft drinks are placed over the phone and the suppliers deliver the goods to the premises.
- Company affiliations: The business is not registered with CIPC. The business owner is in the process of registering the business.
- Company identity: The business has a relaxed family culture. All the employees are close and have been working at the shop since it was set up. The business has no formal processes that are adhered to in terms of managing the operations.

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4.2.4 SMME_D: Bakery

- Overview: The bakery business was established in 2006. The owner of the business was employed on a full time basis when the business was set up. The owner had a passion for baking from a young age. The owner was in need of an alternative revenue stream at the time when the business was established. As the owner's passion for baking grew the number of customers that the business serviced also started increasing. The high demand for cake orders eventually put a lot of strain on the owner and made it hard to manage two jobs. In 2008 the owner decided to quite full time employment and focused on running the bakery business full-time. The business specialises in making cakes for various occasions including weddings and parties. The business also offers a training service to aspiring cake makers. The business operates from residential premises with a staff complement of three full-time and one-part time employees.
- Company Strategies: The training service offering was introduced in January 2016. Due to a high demand for this service the owner is looking for business premises as it is becoming hard to operate from home due to space limitations. The owner's goal is to grow the business and make it operate without her involvement on a daily basis. The business owner believes that in order to survive and remain relevant in this line of business one needs to understand what the customers require and keep on innovating.
- Organisational Classification: The business is a micro enterprise in the manufacturing sector. The full time employees are responsible for baking and decorating the cakes. The part time employee is a driver responsible for delivering wedding cakes to customers. The owner's responsibilities include purchasing stock, receiving orders from customers, baking, decorating, and facilitating the training sessions.
- Internal interactions: There are no formal meetings that get set up in the business. Internal interactions happen as and when required. The business owner communicates with the employees using WhatsApp or conducts face to face interactions.

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- External interactions: The client base for this business comprises of event planners, brides, grooms, parents and other individuals that want to buy cakes and acquire baking skills. The clients are predominantly from the Gauteng province. The market for wedding cakes includes customers from other provinces as well as neighbouring countries. Interactions with customers happen via the mobile phone, email and social media platforms i.e. Facebook, Instagram and Twitter.
- Company affiliations: The business is registered with CIPC and pays taxes with SARS on an annual basis.
- Company identity: The business does not have formal structures. They have a culture of continuous innovation; treating each other as equals and with respect.

4.2.5 SMME_ E: Power Line Construction

- Overview: The overhead powerline construction and consulting company was founded in 2011 by two directors. The business was set up after an investigation conducted by the directors identified various opportunities in the market for new players in the power line construction space. The business specialises in the design and construction of low, medium and high voltage transmission and distribution of powerlines and substations. The business operates from offices in Johannesburg and Durban. The business provides services to clients such as power utilities and municipalities in Gauteng, Western Cape, Eastern Cape and the North West provinces in South Africa.
- Company Strategies: The Company's vision is to play an important role in building the power infrastructure and "keeping the lights on" in South Africa. The company's mission is to strengthen its partnership with clients and continue to offer a differentiated service in the market. In 2013 to the first quarter of 2016 the business went through a tough financial period. During this period one of the major clients cut down the spending on suppliers. The Durban office was shut down from June 2013 to March 2016. The business has worked hard to acquire new clients and has started recovering financially. The Durban office was re-opened in April 2016. The current plans are to employ more staff in Durban due to a long term contract that was secured with the local municipality.

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As part of the growth plans, the business is planning to introduce new technologies to improve efficiencies in power line construction. The technologies have been successfully implemented by various organisations in Europe. The directors are working with suppliers in Europe to adapt the technologies to cater for local requirements.

- Organisational Classification: The business has a staff compliment of one hundred and twenty full time employees, two directors and one general manager. The business is classified as a medium enterprise. The industry sector that the company operates under is construction. The company employees possess skills ranging from civil, electrical and mechanical engineering. Blue collar workers are also part of the staff complement working in various client projects.
- Internal interactions: The Company's employees are based at various locations, some are office bound and others are in projects located at client project sites. Regular face to face meetings are held with the resources that are office bound. The mobile phone is frequently used for communicating with employees that are based at project sites. The company newsletter printed on a monthly basis is an important form of communication that keeps all employees up to date on developments and achievements. The company recently held strategy sessions in Johannesburg and Durban where all the employees were taken through the company vision, mission, short term and long term plans.
- External interactions: One of the roles that the directors fulfil is to manage the relationship with existing clients and secure new work. Interactions with clients happen through face to face meetings. The company website plays an important role in providing information to existing and prospective clients on the service offering.
- Company affiliations: The Company is registered with CIPC and pays taxes on an annual basis with SARS. The business is also registered with Engineering Association.
- Company identity: The powerline construction company is a family business that has a flat structure. The directors are understanding, accommodating and have built trust with their employees. The company does not have formal governance processes and procedures in place.

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4.2.6 SMME_F: Pizza Franchise

- Overview: The business was registered by two directors in November 2011 and started operating the same year. The franchise partner that the business bought into is one of Africa's leading take out and home delivery chain. The business offers pizzas made with unique recipes and a vast array of topping selections. The business owners bought into the franchise business for two reasons. The first reason was due to the need for flexibility, one of the directors resigned from full time employment in order to spend more time with family whist making enough money to make a living. The second reason for starting the business was to create employment opportunities for the local communities. The business owners run three stores in the following Gauteng townships i.e. Soweto, Sebokeng and Atteridgeville.
- Company Strategies: The vision for the business is to grow, empower and develop the staff. The business also aims at positively impacting the communities where they operate while maintaining a sustainable growth business model. The business owners were in the process of acquiring a fourth store within the franchise chain before the end of 2016.
- Organisational Classification: The business started with sixteen employees in 2011 and has expanded to fifty-six employees. The business is classified as a medium enterprise operating in the retail sector.
- Internal interactions: One of the directors oversees the running of the stores on a full time basis. The full time director visits the stores three times a week. On a daily basis, the director interacts with the store managers using the mobile phone and email to get the latest sales updates. A meeting is held once a week with the store managers to conduct cash flow analysis. On a monthly basis a meeting is held with all the staff members to review store performance and determine if they are achieving the sales targets.
- External interactions: On a fortnightly basis, one of the directors meets with the franchisor to conduct store evaluations. During the store evaluations they go through a list of items to verify if the store is complying with the franchisor requirements. Daily interactions are conducted via email and the mobile phone with the franchisor to share information and resolve any problems that arise.

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- Company affiliations: The business operates under a franchise agreement. The business is also registered with the SARS.
- Company identity: The business embraces a culture that promotes togetherness and a family oriented environment. The owners of the business are approachable and have an open door policy.

4.2.7 SMME_G: Land Surveying

- Overview: The land surveying company was established in 2006. The company's service offering includes land surveying, town planning and geographic information services. Eighty percent of the company's clients are parastatals and municipalities and the remaining twenty percent are established companies in the private sector. The company runs projects in various provinces across South Africa including Gauteng, Limpopo, Mpumalanga and the Eastern Cape. The business has one director who works full time in the business and heads up the Geographic Information Systems (GIS) area. The management structure consists of the head of surveying, head of town planning and head of sales. The business operates from an office park in Midrand, Johannesburg.
- Company Strategies: The Company's vision is to create "smart cities" in South Africa by using modern technologies to automate the integration and presentation of geographic information. The business owner does not have plans to expand the current operations in the short term due to financial constraints.
- Organisational Classification: The entity is classified as a small enterprise with a staff complement of sixteen full time employees. Majority of the employees are professionals with diplomas and degrees in their areas of expertise. The company's resources include amongst others an office administrator, land surveyors, designers, data captures, systems analysts and developers.
- Internal interactions: At every given point in time, the company's employees are spread across three locations i.e. company's office premises, client premises or at various sites working on projects. Face to face meetings and communication via email are used for interacting with staff members that are office based. The mobile phone is used for communicating with staff members based at client premises or working in projects at various sites.

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- External interactions: Interactions with clients and suppliers are conducted via email, face to face meetings and mobile phone.
- Company affiliations: The entity is registered with CIPC and pays taxes to the SARS. The company is also affiliated with the Professional Body for Land Surveyors in South Africa.
- Company identity: The business has a family oriented culture. The business owner has an interest in knowing the employees beyond the work environment. The business does not have formal processes to govern its operations.

4.2.8 SMME_H: The Farm

- Overview: The business was registered in November 2013 by two directors. The business operations kicked off in January 2014. The directors are passionate about farming. They were exposed to farming at a very young age by their parents who were farmers. The fifteen-hectare establishment is located in Krugersdorp. The farm specialises in the primary production of lettuce, broccoli, green beans, spinach and green peppers. The business sells its produce to the fresh produce markets in Johannesburg and Pretoria, packaging companies that sell to large retail stores, informal traders and also sell to other farmers. The directors do not work in the farm on a full time basis; they have a farm manager to looks after the day to day operations.
- Company Strategies: The vision for the business is to enter the imports and exports market, diversify the product offering and create jobs for the local communities. The medium term goal is to employ one hundred employees by 2018.
- Organisational Classification: The Company is classified as a small enterprise employing a total of twenty-six employees. The employees fulfil various roles including farm manager, drivers, chemical spraying staff, and general farm workers. During high production seasons, casual employees are hired to assist with harvesting. The industry sector classification for this business is agriculture.

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- Internal interactions: On a daily basis one of the directors interacts with the farm manager using the mobile phone to get an update on the work achieved the previous day and go through the plan for the current day. There are no formal meetings held with the rest of the farm workers unless a need arises. The directors have an open door policy; they engage with the staff informally once a week when they are at the farm.
- External interactions: Interactions with the agents that sell the produce is conducted using the mobile phone, email and the Internet. The agents call the directors to confirm the amount of produce that was taken from the farm to the fresh produce market. When the stock reaches the market, the stock information gets captured on the system with associated pricing that it will be sold for. The directors are able to view the information on their produce using the agents' website. Once the produce has been sold, the agents send an email with information of the quantity of produce sold, quantity left on the floor as well as the total amount of funds to be deposited to the Bank account. The owners interact with other farmers on platforms such as Facebook to share information.
- Company affiliations: The business is registered with CIPC and SARS. The business is currently not affiliated to industry bodies. The directors are working on acquiring the Global Gap certification which will enable the business to gain access to global markets.
- Company identity: The model that has worked for the business is to hire the "best people for the job". Each person that gets hired in the farm is given a probation period of one month, during probation other farm workers appraise the new employee and provide feedback if the new hire is assimilating with them. The culture of ownership, accountability and responsibility has been embedded to the farm workers. The owners have an open door policy and encourage prompt communication amongst their employees. Decision making is decentralised; the workers are recognised and have the ability to make decisions on their own and don not have to wait for the owners.

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4.2.9 SMME_I: Car Wash

- Overview: The car wash business was established in July 2014. The owner identified a business need where he worked as barista in a coffee shop at one of the major banks in Johannesburg. During his interaction with customers and looking at the services provided at the campus, the owner identified the need to introduce a car wash that would service the Bank employees. The business operates in three Bank campuses in the Johannesburg CBD. When the business started in 2014 it operated in one campus, the owner washed the cars himself with the support of two employees. The business has grown over the past two years and now employs a total of fourteen employees including the director who works in the business on a full time basis. The business does not have office space, all the employees including the owner work form the Bank's parking lot where they wash the cars. The owner conducts majority of the business operations using his mobile phone and the computer at home. The eco-friendly car wash uses bio degradable chemicals as well as less water and electricity in its operations.
- Company Strategies: The business has a documented growth strategy which has been executing on over the past two years. The short term plan for the business is to have presence in all the Bank's campuses in the Johannesburg CBD. The medium term plan is to expand to all the Bank's campuses in Gauteng. The long term plan is to establish presence in all the Bank's campuses in South Africa. The owner is currently engaging with the Bank's management towards the implementation of the business's growth plans. The owner is passionate about paving the way and grooming up and coming entrepreneurs. As part of the realisation of the long term strategy, the Bank is working on an enterprise development plan where the owner of the car wash will train unemployed millennial entrepreneurs from disadvantaged communities on how to set up and run a sustainable and profitable car wash business. On completion of the training programme, the millennial entrepreneurs will be allocated equity in the business.
- Organisational Classification: The Company is classified as a small business employing a total of fourteen employees. The employees fulfil various roles including business manager, cashiers, and car washing staff. The industry sector that the business operates in is the retail sector.

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- Internal interactions: The owner holds weekly "vibe" meetings with the employees. The objective of the weekly meetings is to go through the successes, challenges and areas of improvement. More importantly the meetings are aimed at improving staff morale. During the course of the week, the owner interacts with the employees using the mobile phone and walkie talkies allocated to each staff member. Walkie talkies are the frequently used mode of communication amongst the staff.
- External interactions: Interactions with the business clients are conducted in various ways. When clients book in their cars, they interact with the cashiers who sit at the various parking areas. When the cars have been fully serviced, a text message is sent to the client indicating service completion. All service enquiries by clients are handled by the owner, they are routed to the owner's mobile number or email address. The owner engages with suppliers to order stock using the mobile phone and via email.
- Company affiliations: The business is registered with CIPC and SARS. The business is not affiliated with industry bodies.
- Company identity: The business uses a philosophy of listening and understanding the client needs as well as treating each client as unique. Delivering an exceptional service to the clients is upheld at all times. The car wash employees including the owner have built a relationship with the clients; they know most of them by name which is something that the clients appreciate. The business owner encourages the employees to maintain trust and honesty at all times and to treat the clients' possessions with respect.

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4.2.10 SMME_J: Image Coaching

- Overview: The image coaching business is based in the northern suburb on Johannesburg. The business is operated by the owner on a part time basis from residential premises. The business was registered in 2012 and started operating in 2014. The business offers professional services to help clients align their image with personalities, goals and roles. The business also offers services to assist clients carry themselves with the required confidence to look, feel and achieve their best. The reason that led to establishing the business was the owner's passion for fashion and the need to link one's outlook with how they show up and carry themselves at various occasions. The business offers one on one as well as group image consultation sessions to clients. The owner also conducts workshops and presents at various events on image coaching.
- Company Strategies: The owner plans to increase the client base by advertising the business extensively in various platforms. The owner plans to continue running the business on her own for the next year and then hire a full time resource in 2018 to assist with the operations.
- Organisation Classification: The business has one employee (the owner) and employs temporary staff as and when a business need arises. The business is classified as a micro enterprise operating in the personal services sector.
- Internal Interactions: The business is operated by the owner and does not have full time employees. The owner employs temporary staff to assist with administration and also outsources services such as catering, video, photography and make-up. Communication with temporary staff is conducted using the mobile phone. Face to face meetings are held with the staff to align on client requirements and acquire feedback on work delivered at events.

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- External Interactions: Even though the business is operated from home, the business owner meets the clients at their preferred locations such their homes and restaurants. Some clients prefer to meet online using applications such as Skype and Facetime. The clients are based in various provinces in South Africa. The target clients for the business are middle class professionals who want to improve their image. The business owner also runs workshops and gets invited to functions to presents on various topics relating to image, branding and self- awareness.
- Company affiliations: The business is registered with CIPS (Companies and Intellectual Property Commission) and pays taxes with the South African Revenue services on an annual basis. The business has a bank account with a financial institution.
- Company identity: The business hires temporary staff and service providers that aligned to its vision. The business encourages the staff to go an extra mile to make their clients happy and deliver an exceptional client experience.

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4.3 Short Case study: The Mobile Tuk-tuk Shop

This section presents a case study on a business support organisation in the Western Cape whose mission is to promote entrepreneurship and contribute against poverty reduction through using ICTs as an enabler. The idea for starting the business was conceived in January 2013. This idea came about when one of the directors worked on a project for digging trenches as part of a housing development at a township in Cape Town. When the housing project was completed the residents had limited access to transport to take them to the nearest town or shopping mall and there were no shops in close proximity. After conducting extensive research on a business idea that would address the needs of the township community, a formal business entity was registered in January 2016 by four business partners. The business operates from a warehouse building in Cape Town. The business has a flat structure; the four business partners have no predefined roles. They all participate in various initiatives based on the business need.

- **Business Objectives:** Given the high unemployment rate in South Africa especially amongst the youth, the organisation aims to empower young entrepreneurs from various townships. A pilot project is currently underway in three townships in Cape Town. The business model entails providing support to entrepreneurs such as basic training on running a business, stock management and leasing of fully maintained Tuk-tuks. The young aspiring entrepreneurs are recruited through word of mouth or referrals by the township residents. The entrepreneurs are trained and empowered to run their own mobile shops in the townships. The mobile shop owners create convenience by making the basic essentials available to the residents at their door steps. The programme directors do not take the profits made by the shop owners, instead they support them and ensure that the businesses are sustainable and the communities are well serviced.
- **Value proposition:** The research conducted by the business directors to justify the business model for a mobile shop indicates the following:
    - Transportation contributes a significant cost to township dwellers who make four trips to convergence centres each month.

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- Using an efficient and fit for purpose Tuk-tuk and a trusted entrepreneur to sell goods at supermarket prices to consumers at their front door will result in savings on travel costs.
- Approximately 70% of the South Africans travel by mini bus taxis. A forty minutes ride on a mini bus taxi can cost approximately thirty rands each way. A fifty-kilogram basket of goods purchased incurs the costs of an additional seat on a mini bus taxi for the passenger.
- The value of the mobile shops for the communities is to save them transportation costs of approximately sixty rands which they can redirect to other areas that can improve their livelihoods.

- **The Vision:** The vision for the organisation is to promote the spirit of entrepreneurship in South African. The company is currently testing and refining the business model in the Western Cape. The second test site will be conducted at selected townships in KwaZulu- Natal followed by the Gauteng province. The programme directors are engaging the Department of Small Business Development to secure grants that will help the entrepreneurs with start-up capital and funding for scalling the initiative to the rest of the country.
- **The Business Model:** The philosophy that the mobile Tuk-tuk business model is based on is social capitalism. The model creates opportunities for entrepreneurs to join a fully supported and properly financed and managed programme. The business directors conducted research over a period of two years on the reasons why businesses of this nature struggled to succeed in other countries. One of the reasons for failure was that the entrepreneurs were not given enough support to run their businesses e.g. if a Tuk-tuk breaks down, the entrepreneurs may not have money to fix it resulting in the business ceasing to operate. The programme offers a fully serviced, maintained, licensed and insured Tuk-tuk to the mobile shop owners. The business model provides skills and resources to entrepreneurs that ensure long term self-determination with no limits to growth. The programme enables people with moderate education levels to contribute to the well-being of their families and the country at large. The business currently provides tools to serve approximately three thousand homes whose monthly Fast Moving Consumer Goods (FMCG) spend equates to R3,6 million.

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- **Executing the value Proposition:** A total of twenty-four entrepreneurs from the townships are registered on the programme. The driver of the mobile shop who is the entrepreneur employs an assistant who helps with selling and offloading the goods from the back of the Tuk-tuk. The programme offers the following services to the mobile shop owners:
    - Access to a fully maintained, insured and fuelled Tuk-tuk that is able to carry 500kg of inventory;
    - Effective training programmes i.e. Tuk-tuk driver training, inventory management application training, sales tracking application training and training on the usage of the mobile speed point device;
    - Finance for inventory and living allowance is provided until the shop owners are profitable after which they start making repayments;
    - Access to bulk buying at best available prices is offered by the programme;
    - The programme offers secure overnight storage facilities for the inventory and Tuk-tuks;
    - The marketing of services and products offered in the mobile Tuk-tuk shops is offered through digital and print platforms;
    - Smartphones to enable digital communication with customers and other stakeholders are provided to the mobile shop owners;
    - Business, accounting and tax compliance services are provided to all the shop owners;
    - Ongoing support and training on business services are also provided to the mobile shop owners.

Figure 21 below depicts the following: the goods packed on a Tuk-tuk; the programme director conducting training to the entrepreneurs, the warehouse where the stock is kept and the pamphlets advertising the goods offered on the mobile shop.

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Figure 21: Mobile Shop Service Offering. Source (compiled by the author).

- **The use of ICTs in the Mobile Tuk-tuk Shop:** Three off the shelf applications were procured by the programme, these applications are used for order management, sales tracking and Tuk-tuk tracking. Information technology plays a significant role in the operations of the mobile shop business. The entrepreneurs are able to access information from the three back office applications using their smartphone devices. The entrepreneurs also use their smart phones for communicating with customers and staff at the programme's office. The mobile shop owners are taken through extensive training on how to use the smart phones to access the business applications.

The mobile shop owners are allocated routes in the townships which they are responsible for servicing using their Tuk-tuks. Each Tuk-tuk is fitted with a tracking device for security reasons and for keeping track of routes covered. The tracking device provides the following information:

- Depicts the routes travelled on the Tuk-tuk,
- The number times the Tuk-tuk stopped,
- It also sends a signal when the Tuk-tuk is travelling on an unassigned route (see Figure 22 showing the Tuk-tuk tracking map)

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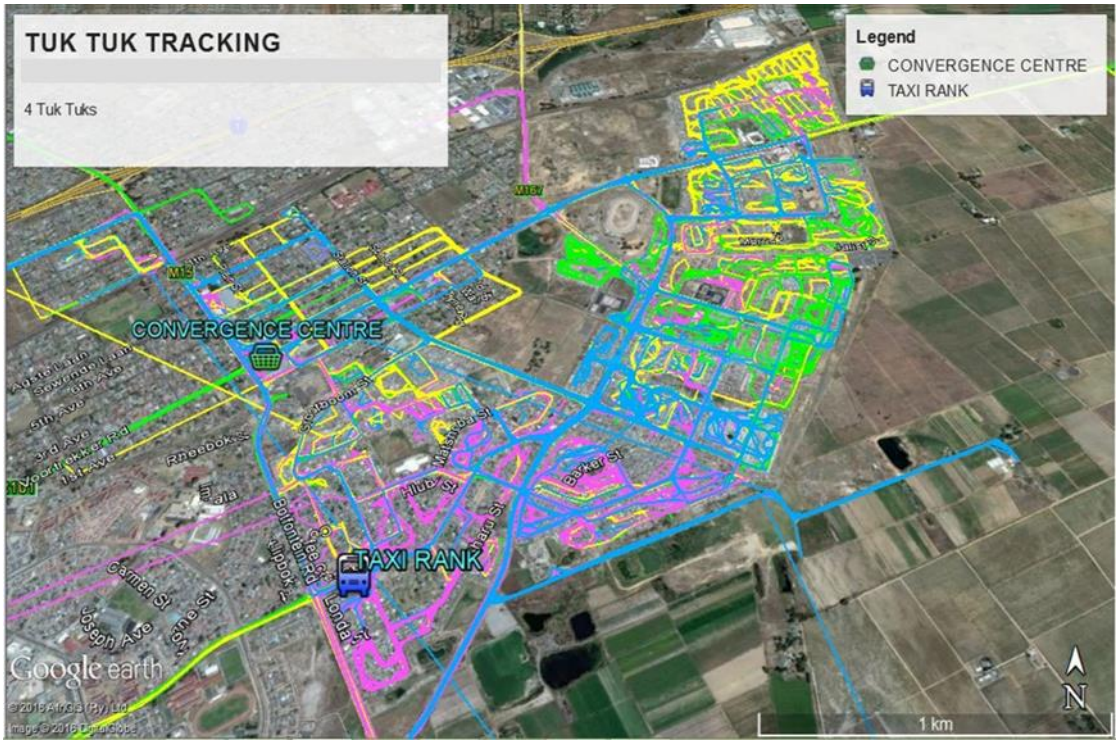

Figure 22: Tuk- tuk tracking map

The mobile shop owners start working on their allocated routes at half past seven in the morning until half past five in the afternoons. The business owners are trained to offer the best customer service and to have an intimate understanding of customer needs. On a daily basis the mobile shop owners respond to orders placed by the customers using mobile phones or respond to customer demand at the time of interaction. Pamphlets advertising the items on sale in the mobile shop are distributed in the townships on a daily basis. The customers are asked for permission to store their contact details on the sales database for marketing purposes. Customer surveys are also captured on the smartphone by the mobile shop owner to determine the service experienced by the customers and products they would like to buy in the future from the mobile shop. When there are special offers on certain items in stock, bulk SMS notification are sent to the customers using the back office sales application. Daily scheduled SMS notifications are also sent to the customers to make them aware when the mobile shop is approaching their locations.

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When servicing a customer, the mobile shop driver assistant offloads the goods from the back of the Tuk-tuk and hands them over to the customer. The mobile shops accept cash and cards as a form of payment from customers. Mobile speed points are used for card payments. Each sale transaction is recorded by the business owner on the sales application using a smartphone. At the end of the day a reconciliation report gets generated on the sales for the day. The income made from all card sales gets credited to the business owner's account.

- **The Vision:** The vision for the organisation is to promote the spirit of entrepreneurship and create employment opportunities in disadvantage townships in South Africa. The organisation is currently testing and refining the business model in the Western Cape. The next pilot site will be conducted at selected townships in KwaZulu-Natal followed by the Gauteng province in 2017.

4.4 Description of Research Results

4.4.1 Introduction

This section contains a description of the research results obtained from the SMMEs that participated in the study. The data was collected from ten face-to-face interviews at the different business sites. A semi-structured interview guide was used to structure and guide the narrative that follows.

4.4.2 Enterprise Profile

From the empirical results, majority of the SMMEs interviewed (46%) were micro enterprises, 36% comprised of small enterprises and 18% were medium enterprises. The empirical data presented above aligns to the findings of the Finmark Trust (2010) study which states that micro enterprises represent the majority of small businesses in South Africa. Table 19 below shows the size of the businesses and the number of people employed.

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Table 19: Size of the business. Source (compiled by author)

Business Classification	Number of People employed	Percent
Micro	1-10	46%
Small	11-50	18%
Medium	51-200	36%
Total		100%

Across all the businesses that participated in the study, majority of them were in the retail sector (36%) followed by the professional services and construction sectors at (18%), manufacturing, agriculture and personal services were reported at 9%. The Finmark Trust (2010) study suggest that given the tough economic environment in South Africa, the easiest, quickest and cheapest business to get into, in order to generate income for those who had lost their jobs or for those in need of extra income would be one in the retail sector. This explains the high proportion of retail businesses in the start-up phase (Finmark Trust, 2010). The industry sector for all the businesses that participated in this study are depicted in the Table 20 below.

Table 20: Business Industry Sectors. Source (compiled by author)

Industry sector of business	**Percent**
Retail	36,4%
Professional Business Services	18,2%
Construction	18.2%
Manufacturing	9.1%
Agriculture	9,1%
Personal Services	9,1%
Total	100%

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4.4.3 Business Registration

In terms of business registration, 91% SMME owners claimed that their businesses were CIPRO registered. According to Finmark Trust (2010), business owners from Gauteng are more likely to claim that their businesses are registered with CIPRO. One business owner whose business was not registered indicated that the registration process was in progress and had been waiting for a long time to get feedback from the relevant department. The findings of this study aligns to Finmark Trust (2010) report as majority of the businesses were CIPRO registered.

4.4.4 Business Operating Location

Previous research indicates that most small business owners (70%) in South Africa operate their businesses from residential premises. Service providing businesses were more likely to operate from business parks, shopping malls or office blocks than retail businesses. Retail businesses on the other hand were slightly more likely to operate from street corners or pavements than service providing businesses. Owners with registered businesses were more likely to operate from business parks, shopping malls or office blocks. Owners of unregistered businesses were significantly more likely to be operating from street corners or pavements (Finmark Trust, 2010). Three of the businesses interviewed in this study operated from residential premises. The main reason for operating from residential premises was to save costs. Of the respondent population more than half of the businesses rented premises in office parks or operated from a small holding. A small proportion, 9% did not have office space and operated virtually.

4.4.5 Age of the Business

According to Finmark Trust (2010), almost half (40,9%) of the businesses in the small business sector in South Africa were in the start-up phase (i.e. in operation for less than 2.5 years). 21% of the businesses were in growth phase (i.e. in operation for a period between 2.5 and 5.5 years). 36.5% of the businesses were established i.e. having been in operation for more than 5.5 years (Finmark Trust, 2010). Empirical findings from this study indicates that 27.3% of the SMMEs are in the start- up phase.

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The majority of businesses in the start- up phase were in the retail sector. 54.5% of the businesses were in the growth phase and 18.2% were established. Half of the businesses in the established phase were in the construction sector the remaining half is in the manufacturing sectors. Table 21 below shows the ages of the respondent's businesses.

Table 21: Age of the Business. Source (compiled by author)

Age of the Company	Growth Phase	Percent
Less than 2.5 years	Start up	27,3%
2.5 – 5.5 years	Growth	54.5%
More than 5.5 years	Established	18.2%
Total		100%

4.4.6 Reason to start the Business and Attitude towards the business

Previous research indicates that majority of the small business owners in South Africa started their businesses for various reasons. In terms of their motivation to start their businesses 41% of the small business owners lost their jobs and 17% started their businesses out of necessity to earn money to provide for their families (Finmark trust, 2010). On the other hand, 49% of the SMMEs interviewed in the latest SMME survey conducted in SA cited opportunity as the reason for starting their businesses (Goldstuck, 2014).

The small business owners interviewed in this study noted various reasons that motivated the creation of their businesses. 9% of the SMMEs started their business due to loss of employment. 91% of the business owners started their businesses due to some of the reasons mentioned below which are indicative of a more entrepreneurial orientation:

- Interested in a particular product or service;
- Saw an opportunity in the market;
- It makes me happy;
- Wanted to use my skills;
- I needed more time with my family;
- Wanted to be my own boss and run my own business

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4.4.7 ICT Usage by SMMEs

This section aims to investigate the types of ICTs used by the SMMEs that participated in this study and the reasons for using them. Consistent with other studies (Donner, 2006; Duncombe, 2006), cell phones were used in almost all the cases. Other ICT used included PCs (desktops and laptops), Internet, email, tablets, landline telephones and social media. The usage of ICT was for both business and personal purposes. The respondents sighted the following relating to the usage of ICTs:

- The SMMEs indicated that ICTs are key enablers for their business operations.
- ICTs are used for personal purposes e.g. communicating with friends and family.
- Various ICTs are used depending on the type and size of the business. The ICTs are used for communicating with various stakeholders in the SMMEs' eco-system e.g. employees, customers, suppliers and business partners.
- The use of social media enables the SMMEs to market their business offerings and gain greater access to markets. Table 22 outlines a detailed view of the ICTs used by all the SMMEs that participated in the study as well as the reasons for usage.

Table 22: ICTs and Reasons for usage: Source (compiled by author)

SMME	Type of ICT used	Reasons for using ICTs
Bakery	Computer	Conduct research, prepare spreadsheets, communication
	Cell phone	Communication with clients and colleagues
	Telephone	Purchasing and supply
	Facebook	Advertising, marketing and communication
	Twitter	Advertising
	Instagram	Advertising
	WhatsApp	Communication with friends and family
	Email	Purchasing stock and communicating with clients
	Website	Advertising
	Excel	Prepare business financials

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SMME	Type of ICT used	Reasons for using ICTs
Business Consulting	Computer	Data Capturing, accessing Internet
	Cell phone	Communication with clients and colleagues,
	Facebook	Advertising, marketing
	WhatsApp	Communication
	Twitter	Advertising and marketing
	Drop Box	Data filing and backup system
	Microsoft Office	Prepare presentations and projects
Car wash	Computer	Data filing, generate spreadsheets, banking
	Cell phone	Communication with clients and colleagues, data filing and making calculations as well as purchasing and supply. Communication with staff members and clients Advertising, marketing and information sharing
	Walkie Talkie	Communication with staff members
	Mobile point of sale devices	Card payment transactions
	Cloud	Data filing and storage
	Facebook, Twitter and LinkedIn	Advertising and marketing
	Email	Communication, purchasing and supply
Marketing Consulting	Facebook	Advertising and marketing, communication
	Email	Communication with clients, banking
	Twitter	Advertising and marketing
	WhatsApp	Communication with colleagues
	Computer	Banking,
	Cell phone	Communication with clients and colleagues
	Tablet	Communication
	WordPress (software application)	Building websites for clients
	Joolie (software application)	Building websites for clients

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SMME	Type of ICT used	Reasons for using ICTs
Powerline construction	Computer	Work from home, communication
	Cell phone	Communication with colleagues and clients
	GPS	Construction purposes
	iPad	Communication
	Website	Advertising and marketing
	Email	Communication with clients
	Microsoft	Payroll
	Google Maps	Construction
	Drones	Analyse construction sites
Land Surveying	Computer	Communication,
	Cell phone	Communication with clients and colleagues
	Fax	communication
	GPS	Tracking vehicles
	CAD, GIS	Construction
	Printer	Printing newsletter and projects plans
	Landline	Communication with clients and colleagues
	Google maps	Construction purposes
	email	Communication with staff, clients and suppliers
Pizza Franchise	Email	Communication and reporting from colleagues
	Cell phone	Communication with colleagues, marketing and advertising
	Computer	Data filing, banking
	Point of sale	Enable card payments and records sales volumes
	Facebook	Advertising and marketing, grievance handling with clients
	QuickBooks and Sage payroll (software applications)	Banking and reporting

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SMME	Type of ICT used	Reasons for using ICTs
Image Consulting	Computer	Research, banking
	Cell phone	Communication with clients
	Email	Communication with clients
	Facebook	Advertising and marketing
	Twitter	Advertising and marketing
	Instagram	Advertising and marketing
	WhatsApp	Communication with clients
	Imo	Video calling
	CAVA	Designing material
Spaza Shop	Computer	Banking
	Cell phone	Communication with colleagues, reporting, purchasing and supply
	Vending Machine	Sell airtime, electricity and enable DStv payments
	WhatsApp	Communication with staff member
The Farm	Computer	Communication, generating reports and scheduling work
	Cellophane	Receive notifications, communication, banking, reporting of sales
	Facebook	Advertising and marketing and information sharing
	Farmers' Website	Receive notifications/acquire information
	Email	Communication with clients, reporting of sales, purchasing and supply.
Mobile Tuk-tuk shop	Cell phone	Communication with clients and staff members
	Mobile point of sale devices	Enable card payments
	Vehicle tracking devices	Track the location and routes of the vehicles
	Inventory management system	Monitor inventory levels

Table 23 below provides a summary view of the ICTs used by the SMMEs that participated in the study:

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Table 23: ICTs used by SMMEs and reasons for Usage (Summary). Source (compiled by author)

Type of ICT	Reason for Use
Cell phone	Communicate with Customers, Suppliers, Staff members, Family and Friends
Landline	Communication with Customers
Social Media (Facebook, Twitter, Instagram, You Tube, Instagram, WhatsApp, Imo)	Marketing the business, communicating with customers, keeping up to date with recent trends in the market and learning new skills
Internet	Conducting research, conducting Internet Banking and communicating with Customers
Email	Communicating with Staff members and customers
Computer and Laptop	Preparing business proposals, storing information, preparing presentations and for conducting research.
iPad and tablet	Prepare business documentation
External hard drive and the Cloud	Storing business and personal information
Walkie talkies (Radio)	Communicating with staff members.
Software packages (Pastel, Microsoft, Google map, GPS, CAVA)	Preparing payroll, managing day administrative activities such as invoicing, emails)

The linkages between the data codes was analysed using Atlas.ti network manager in Figure 23 to provide a graphical representation of the related concepts on ICTs and reasons for usage.

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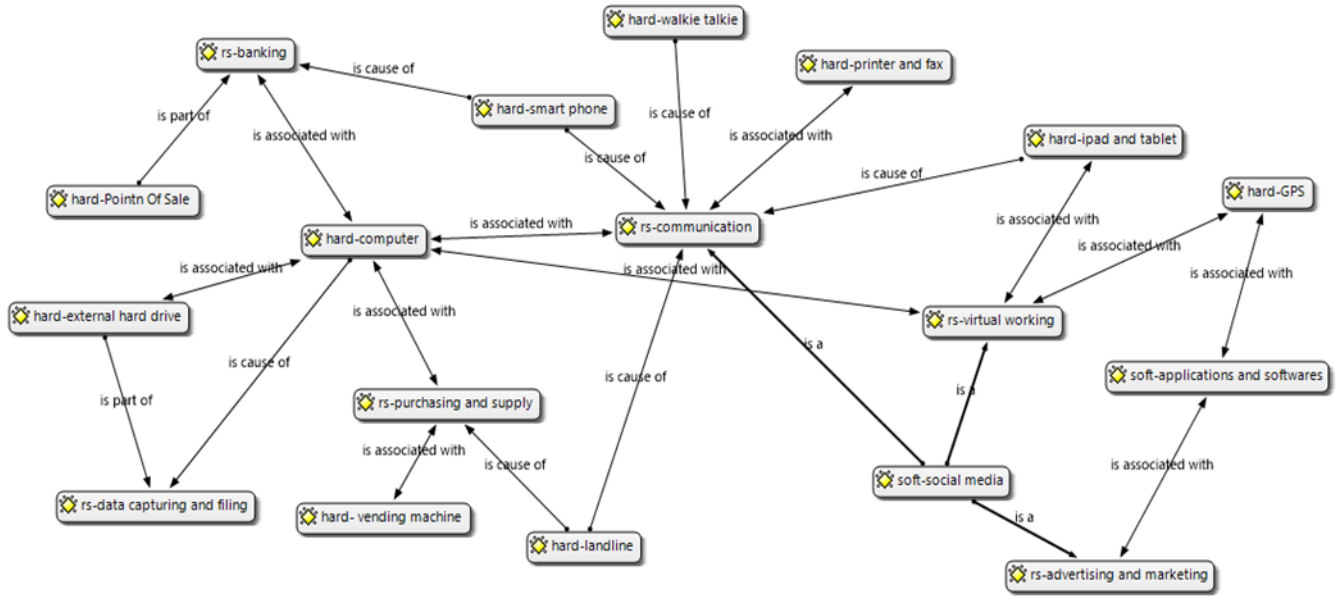

Figure 23: Code Relationship: ICTs and reasons for usage: Source (Atlas.ti)

Mobile phones were cited as the highest used ICT by the study participants. The SMMEs use the mobile phone as a means of communication with customers, staff, suppliers, family and friends. The use of Social media was noted as the second highest used ICT followed by the Internet. Majority of the SMMEs used their mobile phones to access the Internet as well as social media platforms. Majority of the SMMEs use social media platforms for marketing their businesses, communicating with staff and keeping up to date new trends and information in the market. The social media platforms used by majority of the SMMEs include Facebook, WhatsApp, Twitter and Instagram. Global research confirms that smartphones and tablets are displacing basic mobile phones and traditional PC's for many users. The use of social media services has increased over the past ten years, these services have become crucial drivers of demand for connectivity (ITU, 2015).

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4.4.8 The Barriers experienced by SMMEs with accessing ICTs

The data analysis indicates that SMMEs experience various barriers with ICT usage. In terms of groundedness of concepts pertaining to barriers, Figure 24 depicts the frequency of appearance from the empirical data collected from the SMMEs.

- Complicated: Two participants indicated that ICTs are complicated to use in their business operations.
- Expensive: Eight respondents mentioned that the cost of data is high, restricts their ability to access the Internet. In addition to that, the cost of buying software and maintaining devices was also featured.
- Unreliable Network: Six respondents indicated that network connectivity was poor at their locations.
- Lack of digital literacy: Three respondents mentioned lack of digital literacy as a barrier that hinders SMMEs from accessing ICTs.

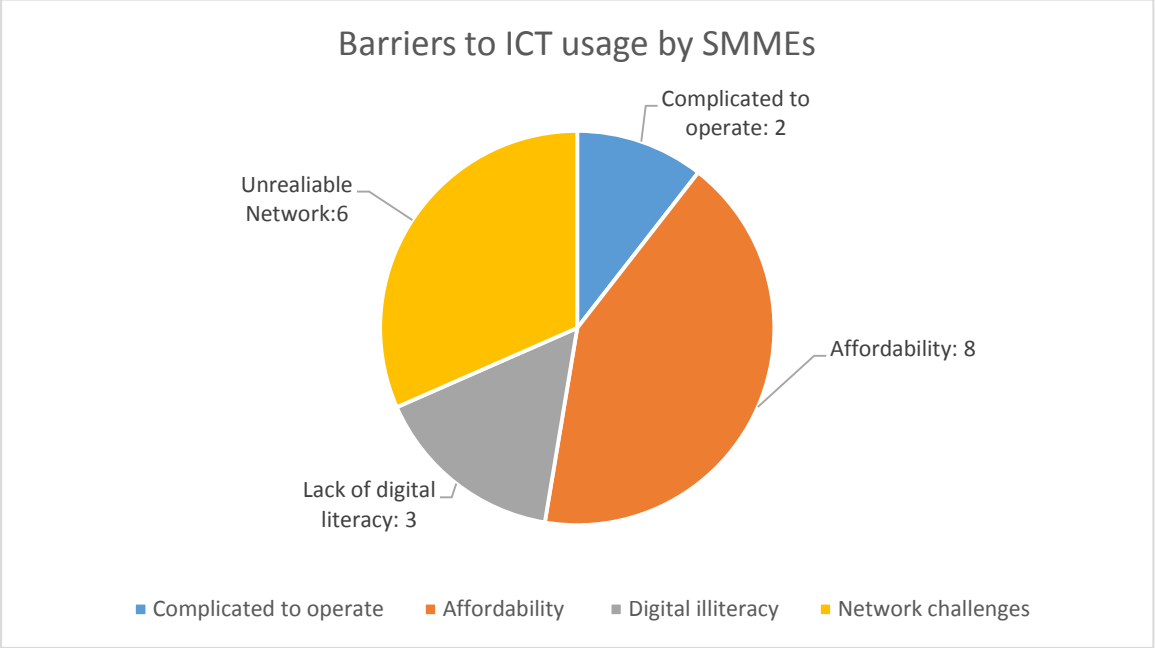

Figure 24: Barriers of ICT Usage. Source (compiled by author)

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The section below provides detailed insights on the barriers mentioned by the study participants.

4.4.8.1 Complicated

The findings reveal that some of the respondents find certain ICTs that they use for personal purposes difficult to use in supporting their business processes. This is illustrated in the words of one of the study participants who finds it difficult to track orders placed by clients using social media platforms:

> *"I don't use WhatsApp for business purposes, although some customers enforce themselves on using WhatsApp for business. I find it very difficult to track orders on WhatsApp"* (Interview Ref: Bakery.1:539).

The findings of the 2014 Finmark trust study indicates that 44% of the SMMEs use cell phone banking, 17% conduct electronic banking transfers and 11% use Internet banking. However, 44% of the cell phone users claim that technology is too complicated to use for their financial activities (Finmark Trust, 2014).

Majority of the study respondents indicated that they use cell phone and Internet banking applications for their day to day banking. Some of the SMMEs find it difficult to use and navigate through their Internet banking applications. The findings are reflected in the interview response below:

> *"It's a bit difficult to create beneficiaries and make payments using my Banks's online banking app on my cell phone."* (Interview Ref: Bakery.1:951).

4.4.8.2 Expensive

The cost and affordability of ICT services remain a determining factor for ICT uptake. Previous research indicates that despite a consistent drop in ICT prices over recent years, the high price of ICT equipment and services remain a major barrier to ICT usage.

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Various stakeholders including policy makers and international organisations have highlighted the need to monitor and address affordability of ICT services in order to ensure that more people including the vulnerable groups (low income population groups) are able to join the information society (Mutula, 2004; Jain, 2002; Mutula and Brakel, 2006; Ongori and Migiro, 2010; Ismail et al., 2011, ITU, 2015).

Empirical evidence from this study raises ICT costs as a one of the challenges that impacts ownership and usage by SMMEs. Majority of the SMMEs especially micro enterprises stated that data costs take up a high proportion of their budgets. The participants consume a lot of data from conducting research, downloading or transmitting large files, downloading video from the Internet and communicating with stakeholders on social media platforms.

Comments from the participants with regards to high data costs include:

> *"Data is very expensive. I end up spending a lot on it because I do research on the Internet, I download videos on YouTube and send emails. If you don't have data you can't get much work done, you can't send emails, the only thing you can do is to receive calls"* (Interview Ref: Bakery.1: 1311).

> *"I'm going to say data because that has become the currency of the ICT. I think data is quite expensive in this country. That is a challenge for me as well because I find that I spend quiet a lot of money on data but maybe it is because my usage is high. I use it for communicating, I use it for research and for up skilling myself"* (Interview Ref: Image Consulting.1:405)

> *"The data tariffs are very expensive, so it makes it a little bit of an issue in the sense that we end up spending more than we can afford"* (Interview Ref: Marketing Consulting.1: 932).

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ITU (2015) indicates that data consumption varies considerably according to the type of Internet activity by the user. Sending a basic WhatsApp message may consume 20 kB, but streaming a high quality video may require 7000 kB per minute. Internet activities with low data consumption include browsing webpages with low graphical content, posting a text message in a social network or sharing a low-resolution image or a text file. Internet activities that are more data-hungry include music, radio and video streaming, Skype audio and video calls, and exchanging high-quality pictures or files with rich graphical content. Figure 25 depicts an example of what a user can do with a with a mobile broadband plan with either 500 MB or 1 GB per month based on estimates from network service providers such as AT&T, Bell, Everything Everywhere and Vodafone

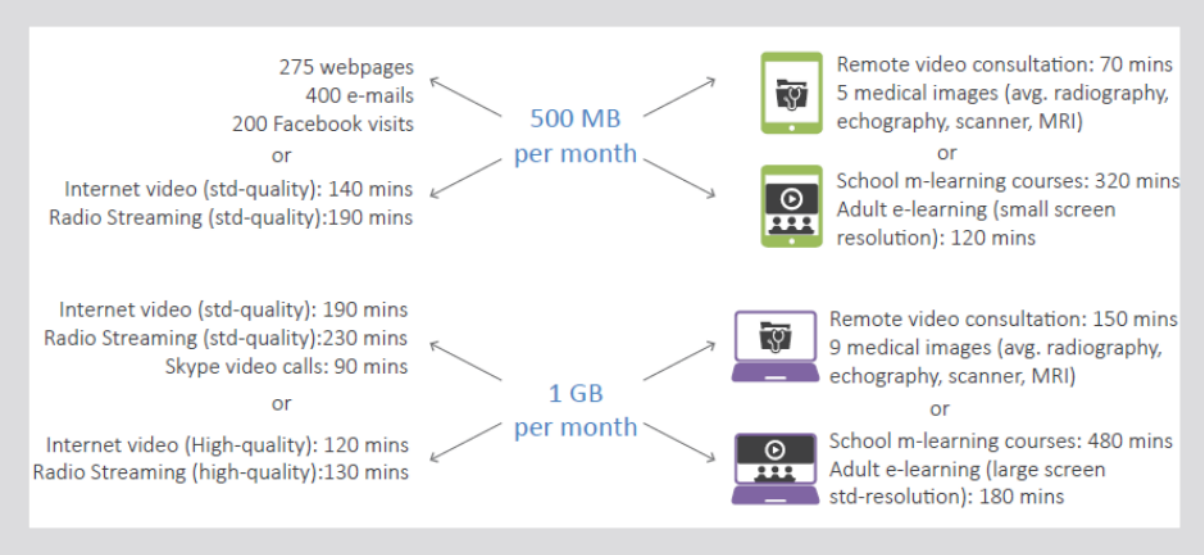

Figure 25: Mobile-broadband and data usage examples. Source (ITU, 2015)

The cost of mobile phone devices especially smart phones was also raised by the participants as a barrier. The owner of a car wash business that participated in the study decided to introduce walkie talkies in the business in order to minimise data and device costs which were very high. The comments from the participants include:

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> *"But also remember that not everyone can afford a smart phone. Okay, something I omitted there on the challenges of using the technology, it comes at a hefty price. Maintaining it is also expensive, especially with the cell phone. So you get to buy it, then you need to maintain it, you need data, you need air time. As long as a cell phone is involved, you need that kind of money to keep it running. To buy a laptop right now is a challenge, it is expensive* (Interview Ref: Carwash.1:1439).

4.4.8.3 Lack of digital literacy

The ITU (2015) study confirms that effective utilisation of ICTs depends on the user's skills, these include ICT and other skills. The skills are critical for the user to leverage the full potential of ICTs from a social and economic perspective. The capabilities that affect people's ability to use ICTs effectively include ICT literacy, adult literacy, secondary and tertiary enrolment (ITU, 2015). Empirical data from this study suggests that some respondents find it difficult to use ICTs without prior training. Businesses that hire employees with lower levels of education spend time on training the staff to use basic ICTs such as smart phones. Limited ICT skills prevent the users from troubleshooting simple issues and requires them to hire skilled technicians. These findings are expressed by the participants' comments below:

> *"The main challenge is that many on my employees are computer illiterate. So even when you have a small issue, it is difficult to resolve it because we really do not have the technical skills. Simple things like maybe a printer giving you error messages, no one can basically determine what the issue is and you almost always have to call a technician or someone else to fix and you find many times it is a small issue but with inexperience you get charged ridiculous amount just to fix a small problem* (Interview Ref: Pizza Franchise.1:243).
>
> *"Some of my employees or even some of my clients, find it difficult to use the handheld payment Speed points. The device is a bit challenging to use especially when you have not been trained on how to operate it"* (Interview Ref: Carwash.1:1407).

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> *"Some of my employees do not know how to use smart phones. I spend time and teach them how to use the devices for accessing the applications that we use for business purposes"* (Interview Ref: Bakery.1:955)

4.4.8.4 Unreliable Network

According to literature studies, poor communication infrastructure is one of the barriers that limits ICT adoption and use by SMMEs in developing countries (Mutula, 2004; Jain, 2002; Mutula and Brakel, 2006; Ongori and Migiro, 2010; Ismail et al., 2011). The empirical enquiry from this study adds that SMMEs experience numerous challenges with mobile network services provided in South Africa. The challenges that were raised range from high call drop rates, unreliable Internet and Wi-Fi connectivity services.

These findings are reflected in the comments of the participants:

> *"I had to install a landline because the network is not so good in this area"* (Interview Ref: Bakery.1:319).
>
> *"I'm trying to go cashless because the environment that I am in here is 100% cashless but the stumbling block is that some of these handheld speed point devices, since they use data and networks, they are not 100% reliable. Sometimes when the network is bad, you cannot use the speed points at all* (Interview Ref.Carwash.1:35).
>
> *"From where I'm sitting, I have used almost every network service provider that is in the country, meaning the top four, Cell C, Telkom, Vodacom and MTN. So, out of the four, the one service provider that has been a little bit more reliable has been Vodacom, the rest did not give me joy* (interview Ref. Marketing Consulting.1:940).
>
> *"Our point of sale system for instance, if it is down due to network problems, we basically unable to transact as a result we lose revenue and suffer bad customer experience"* (Interview Ref. Pizza Franchise.1:167).

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4.4.9 The Benefits of ICT usage by SMMEs

In terms of groundedness of concepts pertaining to benefits of ICT usage, below is the frequency of appearance from the empirical data collected from the SMMEs. Groundedness refers to the number of quotations a concept was mentioned in interviews (refer to Figure 26).

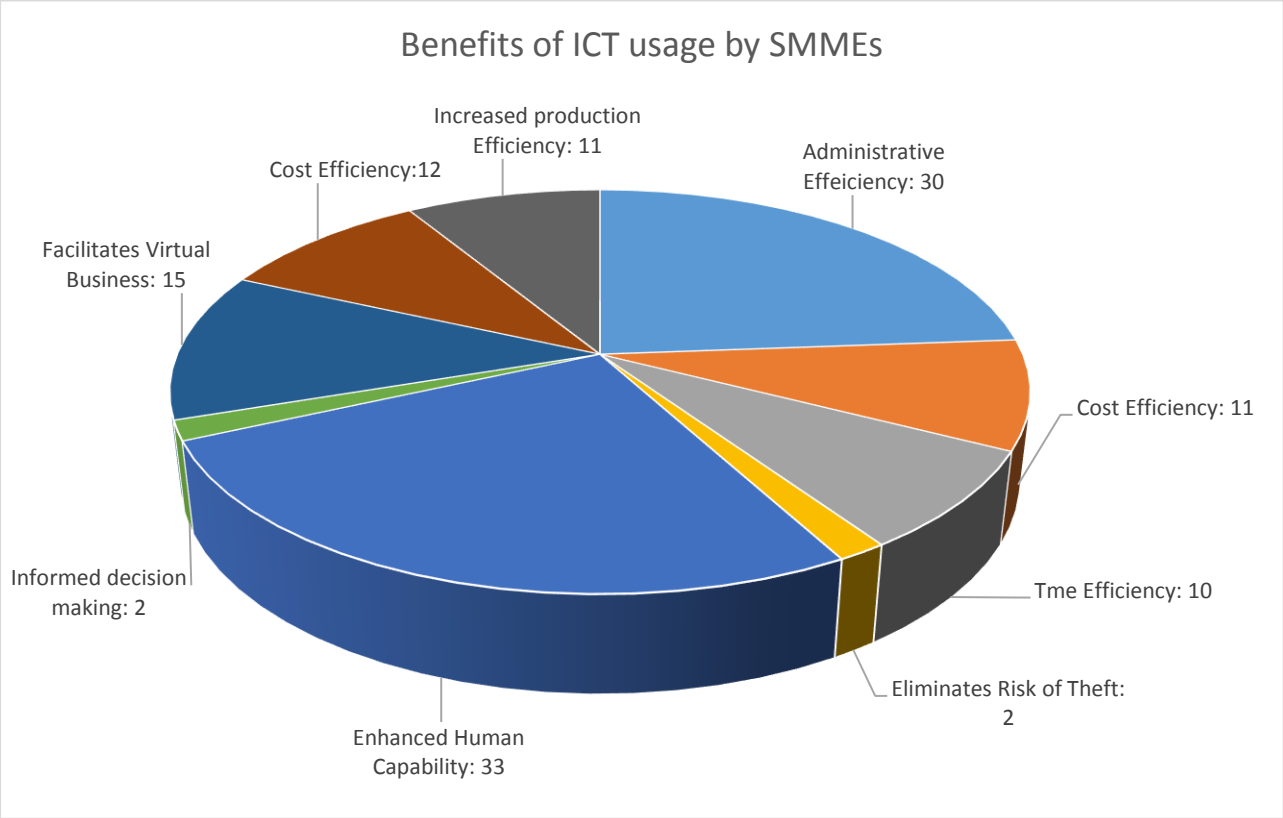

Figure 26: Benefits of ICT Usage. Source (compiled by author).

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Atlas.ti was further used to generate a graphical representation (Figure 27) of the codes associated with the benefits that the SMMEs realise from using various ICTs.

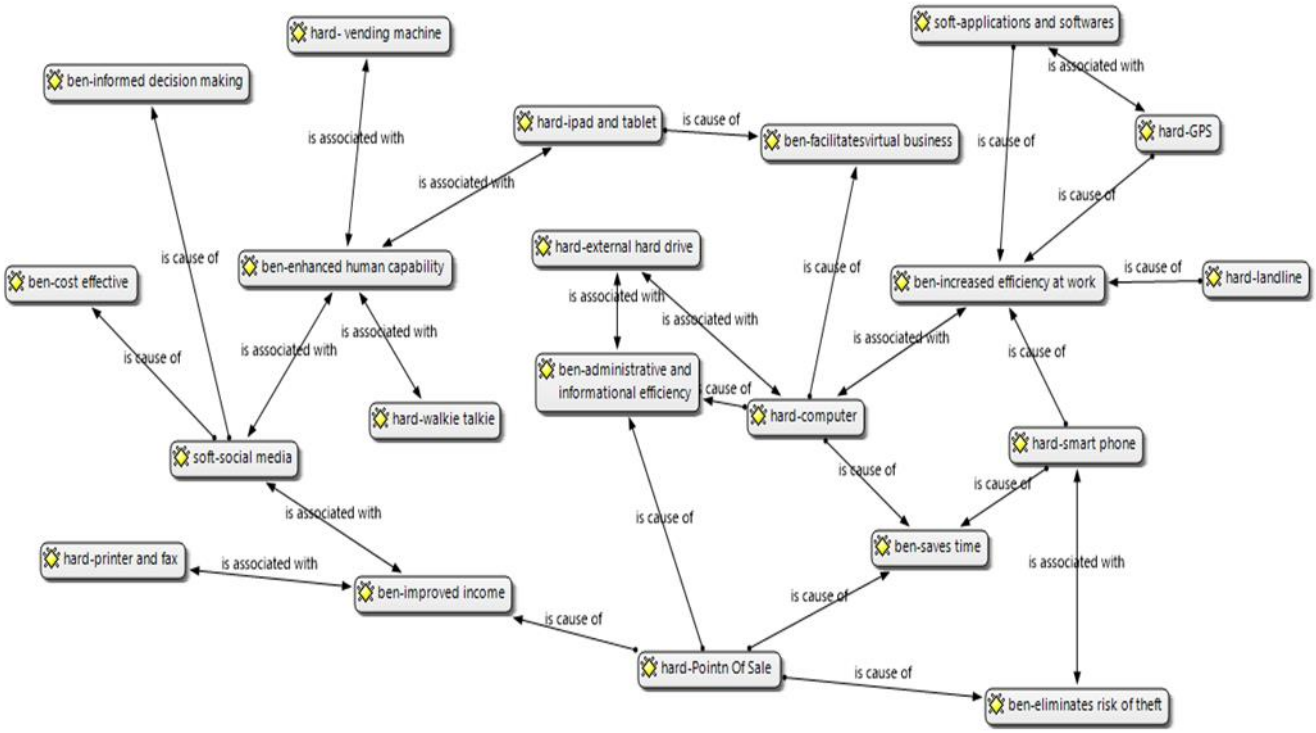

Figure 27: Code Relationship: ICT usage benefits: Source (Atlas.ti)

4.4.9.1 Administrative and Informational Efficiency

Previous research (chapter 2, section 2.5) indicates that ICTs create transparency and easy access to valuable and timely information (Gorla, 2009, Tarafdar et al., 2012). These findings are supported by the empirical data from the participants below:

> *"Technology can help our business not only in dealing with rolling out pylons but it is a source of information. It is a source of rapid gatherings, it's a source of transferring information. For example, when we roll out the drones' technology for checking power lines, those drones will be feeding back via ICT network the information that we need to fast track delivery of the projects"* (Interview Ref.PowerlineConstruction.1:1911).

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> *"The agents at the Johannesburg and Pretoria Fresh Produce Markets have an application that we can access to get various information relating to the prices of the produce. You go to their website, you can be able to track the average and lowest prices, for any product that is on sale at the market"* (Interview Ref. The Farm. 1: 545).

> *"You will notice that some big corporates allow their staff to have access to Facebook because they understand that people are on the go, every chance they get they quickly check what is on Facebook i.e. the latest news, latest trends (*Interview Ref: Business Consulting.1:316).

ICTs enable SMMEs to find potential clients and make them aware of available products (Gorla, 2009, Tarafdar et al., 2012). The participants raised the following comments:

> *"On Facebook people can quickly see what your business offers and then approach you. So it is a nice platform" (*Interview Ref: Business Consulting.1:316).

> *"People are always on their cell-phones. I think it's much easier for people to see an advertisement on social media than it is to see it in a newspaper"* (Interview Ref: Bakery.1:839)

> *"I have set up my profile in Instagram such that it can link to Facebook and Twitter. So I don't have to go to each one of the social media platforms to post or to communicate. I can reach my audience from that central place which is Instagram. I also have Snapchat which I have not used extensively but I am moving towards that because I want to have motivational videos or videos that talk about a certain topic in a day that relates to my services. On social media you can get compliments, you get suggestions, you get feedback, feedback is much quicker than back in the day where you have to send a form or go there meet a person, fill out a form for you know for feedback"* (Interview Ref: ImageConsulting.1:272).

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4.4.9.2 Cost Efficiency

Cost saving is at the top of the agenda for the participants given the tough economic conditions experienced in South Africa. The data indicates that the owners of small and micro enterprises minimised their ICT costs by leveraging on social media for communicating with staff and clients e.g. WhatsApp and Facebook. The use of on-modern ICTs e.g. walkie talkies was introduced by one of the business owners as a cost saving measure due to high costs of mobile phone devices and data previously incurred by the business. Access to information on market prices made available by ICTs enables the business owners to make decisions that help them save costs.

The participant raised the following comments on how ICTs enables them to save costs:

> *"So back in the day I had to pay someone to design my banners business cards. I have recently learnt online how to do all of that myself, now I don't have to pay anyone. As a result, my expenses have been reduced" (ImageConsulting.1:285).*

> *"WhatsApp for me is the cheapest form of communication. If I'm on WhatsApp and we create a group of people say on site, it saves cost as I don't have to be calling each individual. I send the same message and everybody responds. So from a cost perspective it has saved us a lot of money. With ICTs you also don't need office space you can operate on a virtual basis"* (Interview Ref: Business Consulting.1:396).

> *"With my other two sites, I bought walkie talkies. That has helped to actually eliminate all the expenses related to using mobile phones. If you don't have any data, you cannot work efficiently. I use walkie talkies to my advantage in actually structuring a business that needs minimal capital in running costs as well"* (Interview Ref: Carwash.1:786).

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> *"… As a result of the information that I have access to through ICTs, if I decide not to take a product to market, it means I save the cost of packaging. If I buy the packaging and take the goods to market and none of them sell, then the eight rand per box would be a sunk cost. Looking at it from what I'm doing, within the farming space, ICTs have made me more efficient and help cut costs in the process* (Interview Ref: The Farm.1:642)

4.4.9.3 Improved Business Efficiency

ICTs enable faster and more efficient execution of business processes, such as transfer of goods and services, transfer of payments and quality control (Tarafdar et al., 2012). The respondents of this study regard ICTs a critical business enabler which improves their business processes and speeds up the delivery of goods and services to clients. Some of the feedback from the SMMEs is indicated below:

> *"Every six weeks we prepare a planting programme on excel spreadsheet. This programme is used by the suppliers for preparing the seed. A couple of years ago when I helped at my father's farm we used to prepare the same information manually and then travel to the supplier to handover the schedule. In the planting programme, we indicate for example that we are going to be planting twenty thousand heads of lettuce every week. Five thousand heads of broccoli every week. Ten thousand spinach, every beginning of the month, and I send it to the suppliers via email. After reviewing the programme, the supplier would indicate how and when they will start sowing the seed. The use of email improves the speed of interactions with our suppliers, our sowing schedule is always on track and we always keep our promises to deliver the required quantities to our clients" (Interview Ref: Farm.1 :650).*

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> *"There is an online App that I found which is very good for designing business cards. I also use the same App for design reading material in a paper format like a newspaper or a blog format. It gives you all those things. It gives you structure to do that and makes it very easy for me to execute my work"* (Interview Ref: Image Consulting.1:244).

> *"ICTs help me manage my business more effectively. So in a nut shell we wouldn't even have a business without ICTs" (*Interview Ref: *Bakery.1: 325).*

4.4.9.4 Eliminates Risk of theft

Crime remains a critical challenge in South Africa, touching every facet of life. Crime is imposing substantial direct and opportunity costs on business, and detracting from growth. Businesses face significant risks of financial loss associated with crime. This degrades owner and staff morale as well as productivity. The Global Competitiveness Report ranks South Africa at position 141 of 148 countries surveyed for the business costs of crime. The findings of the 2013 SME growth index which surveyed 500 small businesses in SA from different industry sectors indicates that over half of the respondents had been victims of crime in the past year. The costs of crime amounted to an equivalent of 3% of turnover. The most common crime experienced was theft through burglary reported by 60% of the respondents. This was followed by internal theft or shrinkage by staff members reported by 35% of the respondents (SBP, 2014). The empirical study conducted by Goldstuck (2014) raises crime as one of the items that causes sleepless nights to SA SMMEs based in urban locations compared to those in rural areas.

Empirical data from the respondents of this study highlights the risk of crimes they experience and how the use of ICTs enables them to minimise this risks. The use of ICTs enables the business owners to digitise manual processes that expose them to theft of stock or cash. The digitisation of the processes through ICTs enables the business owners to keep track of the inventory and determine shrinkages caused by staff or customers.

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> *…" the use of technology helps in avoiding or controlling theft and cash flow management. Our sales transactions are recorded, the revenue that we collect is accounted for completely. So without technology, we would not be able to get the necessary information that we need to function as a business"* (Interview Ref: Pizza Franchise.1.:167)

Respondents further noted how the use of ICTs such as Internet banking applications and card payment devices minimise the risk of handling cash. A comment from one of the respondents is stated below:

> *"ICTs are the backbone of any business organisation, mine is no exception. We have gadgets that we use to facilitate payments. These gadgets eradicate the risk of carrying cash around. You know in Jo'burg, it goes without saying that cash is high risk. The gadget is a handheld speed point machine that uses a cell phone. The customers just actually swipe their cards and the money gets debited to my bank account. These gadgets make my job much easier, because instead of having cash around, going to the bank, you know risking to be mugged and all that stuff. They save me a lot of time; all I do is to download a bank statement at the end of the day"* (Interview Ref: Carwash.1:1067).

4.4.9.5 Enhanced Human Capability

ICTs play a significant role in enhancing labour productivity and the effectiveness of certain functions or activities of SMMEs. Some studies indicate that the use of ICTs enables the transfer of knowledge among team members and support the creation of knowledge in a particular area (Barba-Sanchez et al., 2007; Ongori and Migiro, 2010). However, the empirical studies of Makoza and Chigona (2012) and (Adera et al. (2014) found limited information on the use of ICTs to acquire new skills or human capital assets by SMMEs in South African and Tanzania. The empirical data collected in this study from the interviews with SMMEs below illustrates the relationship between ICT usage and the ability to learn new skills.

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"Before my team and I go out to meet clients, we brainstorm and do a bit of research on the clients using the Internet in order to know exactly who we are dealing with" (Interview Ref: Business Consulting.1:348).

"In my line of business I need to learn new cake designs and conduct research using the Internet on new recipes. Without ICTs I wouldn't be able to go to YouTube or do the online courses which help enhance my skills". (Interview Ref: Bakery. 1:1179)

"I use the Internet extensively to conduct research on cleaning procedures for things like head lights, leather, etc. YouTube videos also help me a lot to learn on the latest cleaning procedures and products that are available in the market" (Interview Ref: Carwash.1:535)

*"I do a lot of research because I need to understand what's happening in the industry, what other people are doing you know and read up on my services like branding. So I use the computer a lot for that because I think it just gives you a better interface for reading material as opposed to the phone. The phone is good for a quick read but if I need to access blogs, look at journals, look at web pages then the computer is a much better tool to use…. There are some courses that I have done online that have given in-depth knowledge on things that I wouldn't have known otherwise and new skills. I find that now I'm more outspoken than I used to be prior to engaging in this business and that is through developing myself through information that I would read online. If I did not have ICT I would not get access to the material that helped me develop my skills "(*Interview Ref: Image Consulting.1:297).

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> *"Currently I'm busy trying to enrol with Boston City Campus to do an online Media and Marketing course. It's a one-year course that would help me to understand better online marketing, social media, and at the same time the development of basic things like your basic website development and App applications, not only App applications, but, sorry, applications and development of applications" (*Interview Ref: *Marketing Consulting.1: 803).*

What can be deduced from the empirical data is that in order to improve their competitiveness and stay up to date with market trends, SMMEs continually up skill themselves by making use of ICTs. Ongori and Migiro (2010) indicate that as the world economies continue to move towards increased integration and globalisation as a result of advances in ICTs. The adoption of ICTs by SMMEs is critical for their survival and growth.

4.4.9.6 Time Efficiency

According to the study participants, the use of ICTs enables them to save time and focus on income generating activities. Some of the participants indicated that before Internet banking applications were introduced they had to travel to the Bank which meant closing their businesses during that period. The use of ICTs enables them to conduct Banking transactions anywhere they are. The use of various ICTs especially social media platforms has increased the speed of communication, removes borders and makes it possible for SMMEs to gain access to a vast array of local and global clients. The finding of this study align to findings by Ngassam et al., (2013) where the introduction of ICTs in the form of an eProcurement solution enabled rural retailers to be connected to established markets, saved them time to travel to replenish stock and enabled them to spend more time running their businesses.

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The findings are indicated in the comments made by the participants below:

> *"ICTs have cut out the need for me to go to the bank or even the ATM to draw cash to pay my staff. I can just do that over my phone, you know pay people over my phone without actually being there. .... actually when you take advantage of ICTs, then you will find that you have time in abundance"* (Interview Ref: Carwash.1:1335).

> *"ICT has given us not only a platform but a tool to speed up the processes and shorten turnaround times. So for me the time has become a big thing. With ICTs you can interconnect with anyone anywhere, my staff members do not have to come to the office and waste time in traffic. I can communicate with them wherever they are and get the work done. So that for me has been the real benefit of ICT"* (Interview Ref: Business Consulting.1:396).

> "*For me ICTs have shortened distance and time" (*Interview Ref: Image Consulting. 1:268)

> *"With the gadgets and applications that we use such as Facebook, WhatsApp, Twitter and your basic email. They have benefited the company in a sense that time wise we are able to actually make contact with our customers far easier, quicker than before"* (Interview Ref: Marketing Consulting.1:775).

4.4.9.7 Informed Decision Making

ICT are important in accessing information used for decision making such as identifying information needs that influenced decisions on the use of different forms of assets. In the empirical study of Makoza and Chigona (2012), some respondents used the Internet to check and respond to government tenders. The information was also used in coordinating their activities. The use of ICTs noted by the interviewees below describe how the use of ICTs enhances the decision making process:

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> *"So, here in Johannesburg we have two agents that use email and applications on their websites as a means of communicating the latest information on the prices at which the produce was sold in the market. This information enables my decision making process relating to the agents to use for selling my produce the following day" (*Interview Ref: The Farm.1:273).
>
> *"The use of ICTs quickens the pace at which communication happens and decision making. Instead of one guy in one corner going to the other side, he just talks over the radio and communicates the decision to be made". (*Interview Ref: Carwash.1:569).

4.4.9.8 Facilitates Collaboration

Empirical data reveals that the business model for some SMMEs has changed from focusing on establishing physical presence to online presence which facilities efficient collaboration with staff members, customers and suppliers. The participants further reported that they do not need be at the same location with their staff members, suppliers and employees. The use of ICTs facilitates remote communication and sharing of knowledge between the business owners and their stakeholders. Some of the business owners reported that they do not have physical office space. The use of ICTs makes it possible for them to operate their businesses wherever they are. One of the advantages of running a virtual business is the saving on rental and other overheads associated with physical infrastructure. Some of the businesses with physical presence have reported to be investing more time and money on establishing their online presence. Comments from the participants in terms of how ICTs have enabled them to run their businesses virtually are indicated below:

> *..." a lot of people say we do not understand how you can run a farm when you are not there full-time. So, you can get surprised that it is actually running through the support of ICTs, I can communicate with my employees and suppliers anytime using my mobile phone"* (Interview Ref. The Farm.1:417)

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"…and like I said you don't need to have office space; with ICTs you can operate on a virtual basis" (Interview Ref: Business Consulting.1: 396).

"Without ICTs I wouldn't even have a business, my business premises are not easily accessible to customers. ICTs especially social media enables me to advertise the business and gain easy access to my customers online" (Interview Ref: Bakery.1:1071).

"ICTs have made my life so much simpler. It helped me to actually start a business, with little resources. If I may expand on, most businesses will struggle to survive within their first year, just because they are incurring so much overheads. The biggest overhead that you can have is paying rent. I use the Technology to my advantage in actually structuring a business that needs minimal capital in running costs. For my business I do not have office space therefore I save on rent. The cell phone is my "office"; it gives me the ability to do my job wherever I am" (Interview Ref: Carwash.1:1327).

4.4.9.9 Improved Income

According to literature (chapter 2, section 2.7) ICTs enable the SMMEs to broaden their market reach and have a positive impact towards revenue generation (Esselaar et al., 2007; Ongori, 2015). It was noted by majority of the study participants that ICTs are a source of income for their businesses. The SMMEs use social medial platforms for marketing purposes, this has enabled them to increase their client based and turnover. One of the participants reported a 30% increase in turnover as a result of introducing mobile card payment devices in the business. The participants raised the comments below relating to how ICTs have improved their income:

…" without ICTs the business would not exist, our existence is solely based on the availability of the ICT. So the benefits are basically the platform and the enabler without which we would not exist. Every rand and cent that I've made in this business was generated through ICT" (Interview Ref: Business Consulting_1:372).

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"When I started the carwash, I was washing between eight and twelve cars a day and right now we do close to a hundred cars a day. We attracted most of the clients through our Facebook and LinkedIn pages. Most people did not support my business because they did not carry cash. Like I mentioned earlier on that I remember that there were clients who didn't actually use my services, not that they did not like them or did not want to use it but because they were restricted to carrying cash or paying cash but they only use cards. when I introduced the card payment machine, the numbers grew up significantly. In the first two months of introducing the devices, the sales went up by 30%" (Interview Ref: Carwash.1:1215).

"If there was no ICT, my business would not exist and make income at the scale we are at now" (Interview Ref: Construction.1:1693).

"The marketing we conduct with using SMS and emails and has an impact on the growth that we see. Although not many times can we quantify it but we believe that somehow it does make a difference because most of the times when it is a quiet time during the month, say the 9th or the 10th of a month, that is the time we only target to send our marketing SMSs and emails to the customers. We do believe that somehow it impacts on income growth, it reminds them to come and buy pizzas" (Interview Ref: Pizza Franchise.1:267).

4.4.9.10 Reduction in Vulnerabilities

The empirical studies discussed in Chapter 2 found the use of ICTs by SMMEs to have an impact on livelihood assets and structures and to reduce vulnerabilities (Duncombe, 2007; Makoza and Chigona, 2012).

Empirical data from this study supports the finding above as noted by a participant on how the use of ICTs enabled the business to investigate and change their irrigation methods to improve the quality of produce during the drought. The participant's comments include:

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> *"For a small farmer, if you take on one thing now and become efficient, you can actually be more profitable than the big farmers. When the drought started we realised, the way we did our irrigation needed to tweak. Such that, instead of using sprinkler irrigation, you hear, most people will tell you, you do your spacing from one line of sprinkler to the other. They tell you space it twelve meters apart. We did it, but we realised that some plants were not getting water evenly. We find that the plants closer to the sprinkler stand were big and nice. The ones further away were not as good. After conducting research on the Internet we decided immediately to change the irrigation method to six-meter spacing. It was slightly more expensive but at the end it paid off as it ensured that the water was evenly spraying out onto all the produce. Although the initial capital costs were high, the new irrigation method ended saving us a lot of money. We realised that instead of watering for one full hour, we cut the process by half which translated into less usage of electricity and water"* (Interview Ref: The Farm.1:430).

4.4.10 Closing Remarks from Participants

During the closing stages of the interview, the participants were asked to give their recommendations on how to improve the current business landscape for SMMEs and ICT usage in South Africa. The SMMEs raised diverse views surfacing a number of themes and associated recommendations in their feedback.

- SA Government Support and Bureaucracy:
    - Government need to reduce the high regulatory burden and red tape that is distracting SMMEs from focusing on their business activities.
    - There needs to be more visibility and coordination amongst the various government departments on initiatives that are available to support SMMEs.
    - Government intervention is sought towards addressing the high ICT connectivity costs to make this affordable for SMMEs.
    - The government needs to give incentives to large businesses that do business with SMMEs.

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  - There should be improved governance and better transparency on the management of the tendering process.
  - Government departments often pay SMMEs late, this needs to be improved as it puts a lot of pressure on the businesses' cash flow.
  - Good quality education is a fundamental requirement for a skilled workforce. The SA government needs to work on improving the quality of education.

- Shortage of Skills:
  - SMMEs struggle to attract and retain skilled resources due to competition for the same skills with large businesses. The shortage of skills is also associated with the point raised above on the quality of the education system which does not fully prepare work seekers for the job market.
- Lack of Access to markets and support from large businesses:
  - Large businesses need to partner with the South African government and play an active role towards accelerating growth and development of the SMME sector.
  - Large businesses need to source products from local SMMEs instead of importing from other countries.
- Lack of access to Funding:
  - Small and micro enterprises reported to have experienced challenges with acquiring finance from Banks when they started their businesses. Most of them did not have the required collateral to serve as security for the loans. A recommendation was raised indicating that Banks need to revisit their lending models and tailor them to cater for the needs of the SMMEs at various levels of their growth cycles.
- Promotion of Entrepreneurial Orientation:
  - SMMEs need to create more platforms where they can share knowledge, business skills and empower one another.
  - The government and the private sector need to play a bigger role in establishing business incubators that will assist up and coming businesses and link them to existing markets.

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4.5 Application of SL Framework on the Research Results

This section outlines how the SL framework was applied to analyse the synthesised data from the ten SMMEs that were interviewed in the study. The use of the SL framework assisted in gaining an understanding from the respondents of their varying experiences and insights on the impact of ICT usage on their livelihoods. The way in which the SL framework was applied in this study is summarised in Table 24.

Table 24: Application of Sustainable Livelihood Approach

SL Components	Comments on SL Approach application
Vulnerability Context	• All vulnerability contexts which were posed by the respondents were considered. No exclusions were made. • The data that was extracted on vulnerabilities is that which indicated the risks and challenges experienced by the SMMEs.
Livelihood Assets	• The scope of the study focuses on all the capital assets as defined by the SL framework. • This element of the framework enabled the grouping of common assets that SMMEs have access to and how they use their livelihood strategies.
Transforming Structures and Processes	• The key focal ICTs that are considered in the scope are modern ICTs including the Internet, mobile phones and social media. The study examines the usage and reasons for using these ICTs by the respondents. • The relevant institutions used by SMMEs included the public sector, Financial institutions, Corporates. • This element of the framework is also informed by the data relating to the ICTs that are used by SMMEs and the reasons for using them.
Livelihood Strategies	• General categories of livelihood strategies were extracted from the research data. • The livelihood strategies used by the SMMEs are explored as well as how the usage of ICTs ties into their livelihood strategies.

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4.5.1 Vulnerability Context

Research in developing countries suggest that the usage of ICTs such as mobile phones has expanded communication within personal and social networks, this has been shown to have benefits of mitigating vulnerability (Souter et al., 2005). In their three-year study conducted in India, Tanzania and Mozambique, Souter et al. (2005), found that the use of mobile phones made communication easier, improved their social networks and they considered it important for quickly responding to emergencies.

Other studies report on the usage of ICTs to aid the monitoring and assessment of vulnerability factors relating to climatic conditions, disaster preparedness such as earthquakes or flooding (Arunachalan, 2004).

The vulnerabilities impacting the SMMEs were derived from both document reviews and directly from the respondents. The major sources of vulnerabilities were categorised as economic, human, social and political. One of the commonly cited economic vulnerability by the SMMEs related to price fluctuations in the market due to declining volatility in the Rand. Some of the SMMEs used their ICTs to minor price fluctuations in the market. Other vulnerabilities that were raised by the participants included amongst others high unemployment, high levels of crime, corruption in the public sector and the drought which highly impacted businesses in the agricultural sector. Some of the SMMEs reported the use of WhatsApp groups and Facebook with their neighbours or business owners to alert one another of criminal incidents that occurred in the area. A farmer that participated in the study indicated how the use of the Internet and Facebook enabled research and collaboration with other farmers in the African Region on farming techniques to minimise the impact of the drought.

The data from the respondents further revealed vulnerabilities that impacted the SMMEs internally. These vulnerabilities included lack of skills to solve business problems and inability to retain skilled employees as they get attracted by higher pay in large organisations.

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4.5.2 Livelihood Assets

The SL analysis places emphasis on the potential of interventions to facilitate changes in the status of assets. The livelihood assets play an important role in determining the range and combination of choices that people have (Ellis and Bahhigwa, 2003). The use of ICTs has been reported to improve or enrich assets in a number of ways e.g. improved efficiencies in social and productive activities which create a potential for better financial returns (Aker, 2008; De Silva et al., 2008). Studies that were carried out in the African continent by Sife at al. (2010), Jagun et al. (2008), Molony (2005) and Overa (2006) illustrate how the usage of ICTs are able to enhance the user's pre-existing social and economic networks.

The use of ICTs is seen to increase the degree of market participation for local producers and farmers as well as reducing the costs and price dispersion (Arker, 2008, Jensen, 2007; Muto and Yamano, 2009). The work of Jansen (2007), illustrates how the use of mobile phones enabled the fisherman to exchange information about catch volumes and market prices for their products at different locations. This resulted in a reduction of the search costs for the best available markets and prices for their products (Jansen, 2007). The usage of mobile payment services is enabling SMMEs with an opportunity to benefit from faster and more secure financial transactions (Duncombe and Boateng, 2009; Suri and Jack, 2016).

The use of mobile phones improves forms of human capital, Coleman (1994) suggests that mobile phones give users skills and capabilities that enable them to act in new ways. Empirical data reveals that SMMEs use ICTs for business and personal purposes. The analysis shows that the usage of ICTs impacts the following assets:

- Social Capital assets: SMMEs use ICTs to communicate with friends, families, colleagues, suppliers, customers and other stakeholders in their ecosystem. The use of ICTs especially mobile phones and social media platforms enable the SMMEs to strengthen their social networks.
- Human Capital Assets: Most of the participants highlighted how the usage of ICTs enabled them to learn and acquire new skills.

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The improvements in social capital in the form of new skills and capabilities from ICT usage enabled the SMMEs to improve their business offerings which ultimately translated into increased turnover. The studies of (Adera et al., 2014 and Makoza and Chigona, 2012) found limited evidence linking ICT usage to the acquisition of human capital assets.

- Financial Assets: The respondents raised that the usage of ICT such as social media platforms for advertising their businesses had a positive impact on increasing their client base and business turnover. Further benefits of ICT usage are revealed due to time saving and the ability to reallocate the saved time to other activities e.g. Internet or mobile phone banking save the SMMEs time of going to the bank. The improvements in efficiencies was reported by the SMMEs to have an impact on cost reduction and increased turnover.

The analysis further reveals that SMMEs used ICTs to acquire information for their businesses on the following e.g. pricing, latest tenders, business support programmes, and access to markets.

4.5.3 Transforming Structures and Processes

The SL framework refers to structures as organisations and institutions that offer support to the SMMEs e.g. the government, civil society, and private sector institutions (Makoza and Chigona, 2012). The focus of institutions may be on supporting the SMMEs in areas of legislation and regulations aimed at reducing vulnerabilities and improving outcomes (Carney, 1999).

The interview data reveals that the SMMEs interacted with various structure and processes. Most of the SMMEs that participated in the study are formalised and registered with CIPC and tax authorities. Interactions with government departments were also noted from the respondents. Some of the SMMEs have business contracts with the government, whilst others rely on the government funding. The SMMEs also interact with other institutions such as financial institutions, the private sector, industry professional bodies and non-profit organisations. The interactions held by SMMEs with the various institutions and structures vary. Some of the interactions are conducted face to face and other are done using mobile phones, the Internet or emails.

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As discussed in section 4.4.7 the SMMEs use various types of ICT for various reasons. The usage of mobile phones was noted by all the participants. Majority of the SMMEs are connected to the Internet and make use of social media platforms for personal and business purposes.

4.5.4 Livelihood Strategies

According to Doward et al. (2009), livelihood strategies represent a combination of activities and choices that people carry out in order to address their vulnerability. Doward et al (2009), further breaks livelihood strategies into three complementary categories i.e. the first entails the struggle to maintain existing levels of welfare; the second category aims to expand or deepen existing activities through investment such as increasing production of diversifying assets; the third category uses existing activities to venture into different to new activities.

The livelihood strategies undertaken by the SMMEs involved using their assets (financial, social, human or physical) to acquire or improve existing assets. SMMEs use ICTs to acquire new skills (social capital assets) there by improving their income. Some of the SMMEs had long term plans of improving their financial capital by invested in online courses to improve their skills. Some of the SMMEs use their physical assets (e.g. houses, mobile phones) to run their businesses in order to save on rental expenses and improve business turnover. Whilst some of the SMMEs had no growth or expansion strategies in place, others were leveraging the use of ICTs to improve their service offering and increase their client base.

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4.6. ANT Analysis of the Mobile Tuk-tuk case study

This section uses ANT to analyse the empirical evidence from the mobile Tuk-tuk case study in order to provide more context on the research phenomena. The use of ANT started in the 1980's as a recognition that entrepreneurs build networks comprising of technical, social and economic elements. These various elements including the entrepreneurs themselves, are constituted and shaped in those networks (Heeks and Stranforth, 2007). According to Law (1999), ANT writers develop their arguments by telling stories and tracing histories instead of taking snapshots. The analysis of stories in ANT enables a better understanding of the various actors and elements that make up the network (Callon, 1986). Rhodes (2009) used ANT to examine the use of telecentre implementation on socio economic development using a case study of a rural micro enterprise development organisation in South Africa. The use of ANT seemed to be an appropriate means for examining the various actors and elements that constitute the network for the mobile Tuk-tuk case study.

As discussed in Chapter 3, ANT is concerned with the dynamic and simultaneous mutual influence of both the social and technical (Akrich et al., 2002), assuming asymmetry between human and non-human actors. We live in a world made of both social and technical artefacts, we cannot detach society from technology neither can we isolate technology in the abstract (Andrade and Urquhart, 2010).

The major proponents of ANT maintain that it is entirely appropriate for socio-technical research (Akrich and Latour, 1992; Latour, 1992; Law and Callon, 1992). Haseth et al. (2004) further adds that ANT perceives the border between the social and technical as a negotiation process that can assist researchers in circulating the tension between agency and structure. ANT enables researchers to adopt a symmetrical approach to humans and non-humans (Andrade and Urquhart, 2010). Latour (2005) explains the difference between humans and objects in ANT: humans are empowered with intentionality whereas objects are not. However, both humans and objects can modify a state of affairs. The objective of studying human and non- human actors in a symmetric fashion is to avoid imposing "a priori some false asymmetry among human intentional action and a material world of causal relations" (Latour, 2005, p.76).

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The advantage of using ANT is that it makes it possible to frame the analysis of the interplay between technology and society in the middle ground amongst the two conflicting approaches of technological determinism and social determinism (Andrade and Urquhart, 2010). This study addresses the Walsham's (1997) criticism that many information systems studies using ANT are not true to the theory as they focus on the detailed description of a particular network without paying attention to the broader social structures and processes within which the network is formed. Using the case of the mobile Tuk-tuk initiative, this study discusses the critical, local and social issues relating to Actor-Network development, the enrolment of allies, stakeholder harmonisation and the impact of ICT usage on the users at a local level.

4.6.1 Applying ANT on the Research Results

ANT provides insights into the process of constructing the network (Law, 1994). It is the ANT emphasis on the empirical enquiry that allows the researcher to see the relations among different actors in the network (Doolin and Lowe, 2002). By following the actors' actions throughout the different stages of establishing the network, ANT assists us in interpreting the events and explaining the outcomes. Latour (1994) compares ANT to ethnomethodology and highlights that "actors know what they do and we have to learn from them not only what they do, but how and why they do it. It is us, the social scientists who lack knowledge of what they do". In support of this argument, this study presents a detailed account of the phenomenon and associated interpretation of the events.

ANT has not arisen by chance at this particular point in history, but instead represents an attempt to address the increasingly complex socio-technical world (Walsham, 1997). The theory fits well with current conceptual trends in development studies, helping address philosophical lacunae, theoretical shifts, and analytical interests. ANT's theoretical lens has a practical relevance because it extends the understanding of emergent features of development (Ramalingam, 2013).

ANT gives insight into any form of network, however seemingly complex, and it particularly helps by removing the confusions of scale or level (Heeks, 2013). The complexity triggers uncertainty and continuous instability.

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Again, this is ANT's forte because of its anti-determinism, and because it specifically incorporates the notion of networks in unceasing flux (Heeks, 2013).

As discussed in Chapter 3, the use of ANT for analysing the empirical findings for this study instead of other theories e.g. structuration or the theory of innovation diffusion by Rogers (2003) is based on the premise that other theories focus more on technology than the human aspects (Hanseth and Aanestad, 2004). ANT's sociology of translation enables the reconstruction and mobilisation of a complex network comprising of human and non-human players (Madon et al., 2004).

The key feature of ANT is the translation process (Sarosa, 2012). The translation process of ANT aimed at establishing the network unfolds as the four step process of problematisation, interessement, enrolment and mobilisation proposed by Callon (1986) as depicted here in Figure 28 and explained in the ensuing section referencing the Tuk-tuk case study.

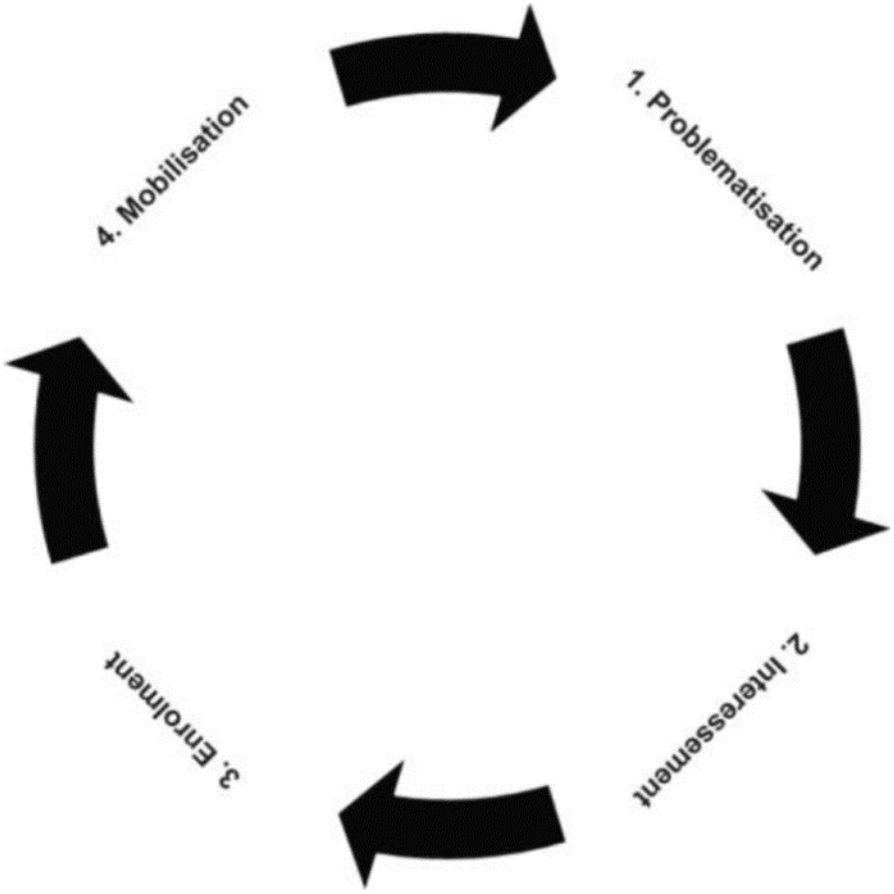

Figure 28: Translation Process: Source: Adapted from Callon (1991)

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The following section elaborates on the findings of the mobile Tut-tuk case study and maps it to the ANT translation process

4.6.1.1 Problematisation

During problematisation, the initiator defines the interest and the roles of the actants. The defined interests should be consistent with those of the initiator (Callon, 1991). As indicated in the case of the mobile Tuk-tuk shop, one of the directors was the major problematisation protagonist. The programme initiator conceived the idea in January 2003 after realising that a poverty stricken community did not have access to transport and retail shops in the area. The programme initiator conducted a detailed investigation which led to the establishment of an entity in January 2016 aimed at achieving a set objective as described by the director.

> *"This programme is aimed at promoting the entrepreneurial spirit and to curb poverty amongst the unemployed youth in the townships" (*Interview Ref: Mobile Tuk-tuk director).

The initiative enables the youth to become entrepreneurs that sell retail goods to communities using Tuk-tuks. The initiative extensively leverages the use of technology to enable the delivery of the goods and services to township communities. The programme directors persuaded various actants that raising the spirit of entrepreneurship and attacking poverty required resources such as financial support, technical infrastructure, assets and people development. The first proposal on the initiative was presented to the local authorities. After a number of engagements, the proposal was accepted by the local authorities as it was in line with the objectives of employment creation and poverty eradication. The funding for the pilot phase of the programme came from angel investors who saw potential on the initiative, local authorities as well as from the directors' own savings.

> *"We are still engaging various government departments to present the business case of this initiative and to secure funding for a national roll-out"* (Mobile Tuk-tuk director).

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Local communities welcomed the initiative from the onset. They have played an important role in the process of referring and selecting candidates to be enrolled as entrepreneurs in the programme.

> *"The local community makes the final decision on the people that we employ. The community prefers to work with people they know and whom they trust"* (Mobile Tuk-tuk director).

ANT uses the concept of both local and global network framing. According to Law and Callon (1992), the global network is a set of relations that are built outside the project and which enable it to take place e.g. money, expertise and political support. The local network consists of relations found inside the project, these relations ensure the successful implementation of the initiative. Intermediaries are all the artefacts or deliverables that pass between the various actors in the network (Callon, 1992; Heeks and Stranforth, 2014).

The main actors (human and non-human) identified in this study are depicted in Figure 29:

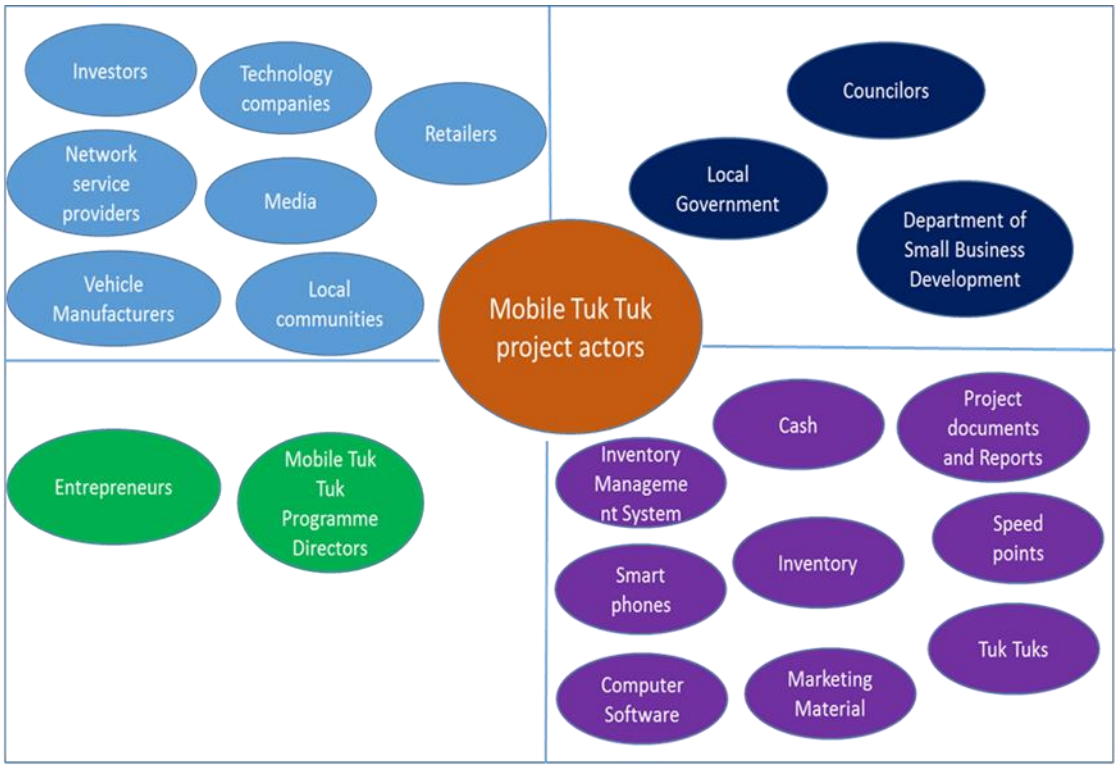

Figure 29: Mobile Tuk-tuk Project Actors

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The key roles and interest of the actants for the mobile Tuk-tuk initiative are depicted in Table 25.

Table 25: Mobile Tuk-tuk Actors. Source (compiled by author)

Actor	Interest
Obligatory Passage Point	
Mobile Tuk-tuk directors	Initiators and drivers of the programme Ensure viability of the programme
Service Providers /External Parties	
Investors	Provide financial capital, Expect financial return on the investment
Entrepreneurs	Earn income Run profitable businesses. Improve well-being
Technology companies	Increase market share Profit maximisation
Retailers	Increase market share Profit maximisation
Tuk-tuk manufacturers	Increase market share Profit maximisation
Network service providers	Increase market share Profit maximisation Increased access to ICTs as per their strategy
Local communities	Acquire goods and services at their door step. Save on travel costs
Government Related Actors	
Local Government	Achieve objectives of local economic empowerment and poverty eradication
Councillors	Represent the interests of the local communities and align to the Local Government's objectives
Department of Small Business Development	Support the development of small business and poverty eradication
Media	Disseminate information about the project to various stakeholders

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Actor	Interest
Non-Human Actors	
Smart phones	Facilitate the operationalization of business processes
Computer software	Facilitate the automation of business processes
Speed points	Enable the processing of card payments
Tuk-tuks	Enable the delivery/sale of goods to the customer's door steps
Inventory	All the goods sold by the Mobile Tuk-tuk owners to customers
Inventory Management System	Tracks the stock levels.
Cash	Facilitate payments for of the goods sold to customers
Project documentation and reports	Outlines content on project information

4.6.1.2 Interessment

This stage involves convincing other actors that the interests defined by the initiator(s) are in fact well in line with their own interests (Mahring et al., 2004). With reference to the Mobile Tuk case, between 2003 and 2015, directors of the programme engaged a number of stakeholders to obtain buy in on the programme and negotiate partnerships with them. The stakeholders included various technology companies that provided infrastructure and equipment. These included tracking devices for the Tuk-tuks, point of sale devices used for card payments, as well as Fintec companies that supplied software for the sales and inventory management systems. Negotiations were also held with major retailers to supply bulk discounts on goods procured through the programme.

Further, a contract was signed with one of the major retailers that did not have a large foot print in the townships, the retailer viewed this as a strategy that would enable them to penetrate the market. A motor vehicle manufacturer donated ten Tuk-tuks to the programme and committed to service and maintain them for a period of twenty-four months. For communication solutions, the programme established a partnership with one of the network operators to supply smart phones to the entrepreneurs that are part of the pilot programme as well as free capped airtime and data for the month which they could top up at their own cost once initial allowance is depleted.

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> *"It has been a challenging journey for us, not all stakeholders have been convinced by the business case for this initiative. Some have turned us down whilst others have agreed to partner with us. We will keep on knocking at every door until this initiative has been rolled out to all the major townships in South Africa" (*Mobile Tuk-tuk director).

4.6.1.3 Enrolment

In an attempt to build a solid network i.e. to make it irreversible, the actants need to be organised (Callon, 1991). After raising eighty percent of the funding and securing contracts with the main stakeholders, one of the directors was given the responsibility to run the initiative on a full time basis with the help of a part time administrator. The programme director drew up a project plan which helped in structuring the activities and ensured delivery was met in line with stakeholder expectations. The comments from the project director indicates some of the challenges that were experienced during the process

"The most challenging task was to get the technology aspects of the initiative in order. We had to integrate various off the shelf technologies to communicate on a single platform. The work was conducted by service providers based in various locations, some were based in India and others in South Africa. The time difference posed a challenge in terms of getting the work fully integrated and tested on time. As a non- technical person, I had to read a lot on how the technologies work and I relied on advice from others who are more exposed to technology than myself" (Mobile Tuk-tuk director).

The recruitment of the entrepreneurs was conducted through a consultation process with the local counsellors and the community. The training programme for the entrepreneurs began after all the technical aspects were fully functional. The five-day training offered by the programme director includes Tuk-tuk driver training, basic business management training and training on the various applications and tools used in the business. Figure 30 shows the Tuk-tuk driver training session.

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Figure 30: Mobile Tuk-tuk driver training. Source. Compiled by the author

During the planning phase of the pilot roll-out, all the stakeholders were updated on the progress through weekly progress reports and monthly meetings that were held with them. All the stakeholders fulfilled their roles and actively participated in the programme activities. The interaction between human and non-human actants of the initiative was evident from the following comments:

> *"The knowledge and skills that the entrepreneurs acquire in the programme especially ICT and business skills represent development for our future generation. The use of ICTs enables the entrepreneurs to achieve their personal goals, access information, earn income and provide for their families which is something they could not do before" (Mobile Tuk-tuk director).*

From the evidence above, it is noted that the users of the ICTs realised various benefits, the goals of the Mobile Tuk-tuk initiative were also realised.

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4.6.1.4 Mobilisation

During mobilisation the actants become spokespersons representing the network (Callon, 1991). This stage involves constant analysis of various actor's interests to ensure they are aligned and act according to what was agreed with the initiator (Mahring et al., 2004). The programme director managed the relationship with all the project actants. Regular meetings were held with the actants' to gather or provide feedback on progress made, report on issues encountered and to align expectations. These meetings also enabled the programme directors to monitor if delivery was in line with the overall objectives. The customers serviced by the Mobile Tuk-tuk shops were asked to provide feedback on service experienced. This information provided by the customers is carefully analysed by the programme directors. The outcome of the analysis is communicated to the entrepreneurs and other actants in the network. Various improvements have been made on the software used for managing sales and inventory. These improvements were gathered from the feedback received from the entrepreneurs who use the software on a daily basis.

The programme director with the help of other stakeholders ensured that the programme launch was well communicated to the township communities. The programme launch was advertised in various local media platforms including the local newspaper and local radio stations. Pamphlets were also handed out door to door and SMS notifications were sent to a selected sample of customers. The entrepreneurs that are enrolled on the programme have become advocates of the initiative in their communities.

The discussion above shows how the mobile Tuk-tuk programme directors aimed to create alignment of interests and establish the network as a single actor that includes both human and non-human (Latour, 1999).

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4.7 Concluding Summary

This Chapter reflected on various themes that arose from the feedback given by the SMMEs that participated in the study. The qualitative data was analysed using the thematic data analysis method as well as data analysis software Atlas.ti. The SL framework and ANT were further applied to analyse data from the respondents.

The respondents make use of various types of ICTs for personal and business purposes. The types of ICTs that they use and the frequency thereof varied based on the size and maturity of the business. The use of mobile phones for business purposes was reported by all the participants. The empirical data shows that small and micro enterprises use mobile phones extensively for business purposes as compared to medium sized businesses. The use of social media was raised by most of the participants as a platform for acquiring information as well as marketing their businesses.

The findings show that SMMEs experience a number of challenges relating to access and use of ICTs. Some of the challenges that were raised by the participants include lack of ICT skills, high ICT costs and challenges with network connectivity. The views of the participants also highlight the social and economic benefits relating to the usage of ICTs.

The economic benefits raised by the participants include improved administrative, business and time efficiencies; reduction in the risk of theft, informed decision making and improved income. The social benefits highlighted by the participants include improved ability to learn new skills and capabilities, ability to create employment for communities and help people to earn a living to provide for their families' basic needs. The empirical data also shows the use of ICTs to be associated with a reduction in vulnerabilities by enabling access to improved information and techniques for improved business processes such as the farmers being able to improve the quality of their produce during a drought period.

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The use of ANT as a tool for analysing the research findings provides valuable insights into the human and non-human actors that surround the mobile Tuk-tuk initiative. ANT further provides an explicit understanding of how the various actors and elements relate and interact as part of the network. The discussion also highlights the roles of the various actors in both the local and global networks and how these interact. The analysis indicates how the success of the pilot implementation required buy in and support from a number of global actors such as local government, communities, private sector etc.

What is evident is that the support from the global network actors is primarily determined by the alignment of the initiative to their strategies and careful assessment and consideration of the risks involved. Local ownership was highlighted as an important aspect for ensuring long term sustainability of the initiative.

The local communities, counsellors as well as entrepreneurs enrolled in the programme acted as champions for the initiative. Partnerships with various organisations in the private sector enhanced the programmes financial position and sustainability. Skills training was in the form of ICT skills development to access and operate various ICT tools and applications, business skills, technical skills such as learning to drive the Tuk-tuk as well as soft skills such as customer interaction considered crucial for the empowerment of the entrepreneurs towards the sustainability of the initiative. Even though the mobile Tuk-tuk initiative was still at pilot phase, the programme director indicated that it had already started to fulfil some of the objectives of creating employment and improving the well-being of unemployed youth in the townships.

The discussion conducted in this Chapter is aligned to the research objectives. This Chapter presents empirical data from the study participants. The data highlights the types of ICTs used by SMMEs and the reasons for usage. The benefits and barriers of ICT usage are also presented.

The discussion in Chapter 5 builds on the themes that emerged from this Chapter and uses them as part of building a conceptual framework for this study.

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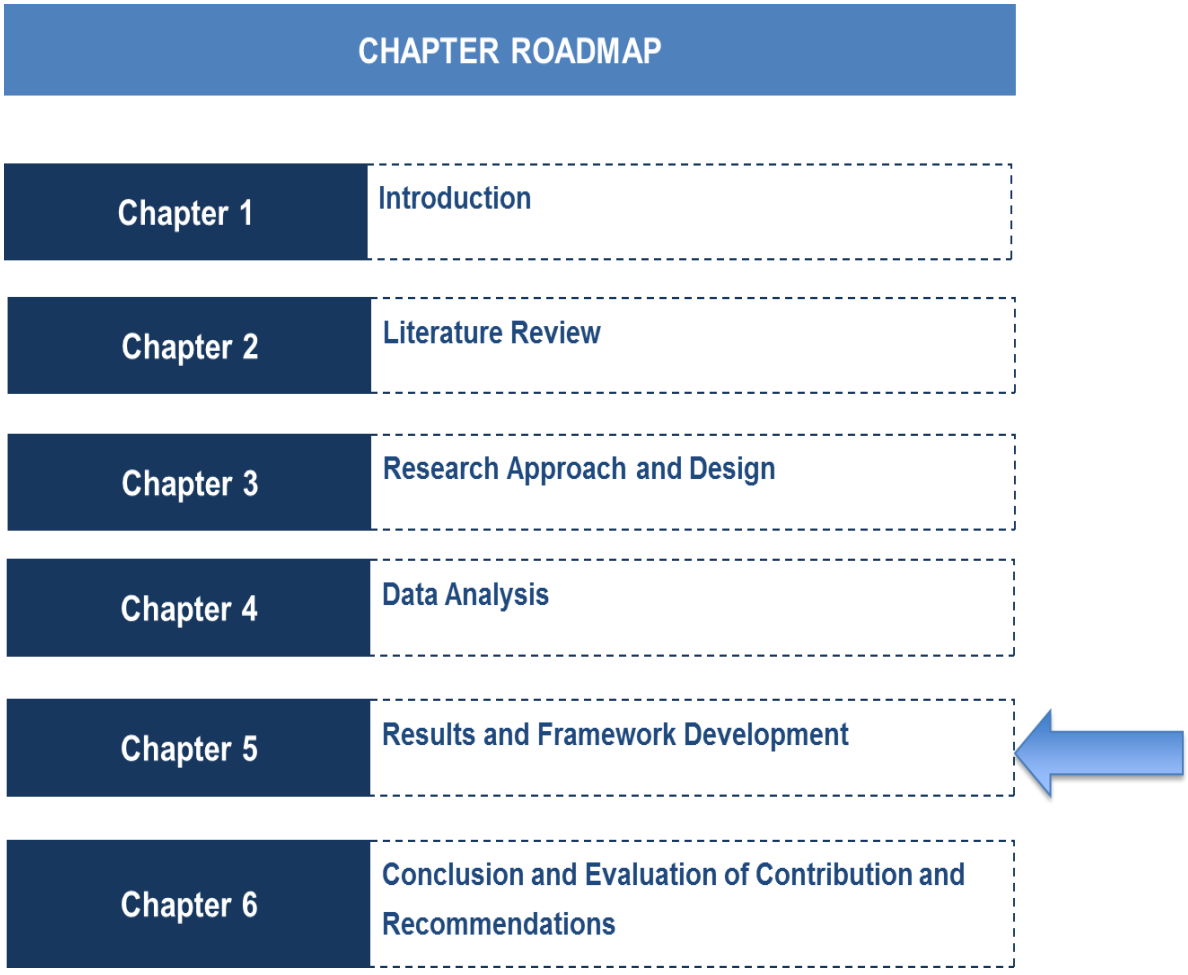
Chapter 5: Results and Framework Development



5.1 Introduction

The previous Chapter presented empirical findings from the SMMEs that participated in the study on the role and impact of ICT usage. The main objective of this Chapter is to draw on the discussions held in the previous chapters and construct a conceptual framework enabling the use of ICTs by SMMEs towards poverty reduction. This Chapter is organised into sections that progressively build the argument being presented. A discussion on the empirical research findings unfolds in the second section followed by the construction of a theoretical framework in the third section. The theoretical framework that is constructed in this study uses the SL framework and ANT as the point of departure. The final section presents the summary for this Chapter.

5.2 Overview of Consolidated Research Findings

As discussed in Chapter 3, this study employed triangulation in order to enhance understanding of the research phenomenon. As explained in Chapter 3, triangulation is a pluralist approach that involves the use of various techniques (i.e. data, methods, theories etc.) to provide a richer, accurate, credible and complete view of a research phenomenon that eliminates bias (Olsen, 2004). Based on the discussions held in the previous chapters, the use of triangulation in this study was achieved in a number of ways.

- An investigation of the research phenomenon was conducted on ten SMMEs in Gauteng (Chapter 4).
- Data from ten in-depth interviews with SMMEs was further analysed using the Sustainable Livelihood (SL) framework (Chapter 4).
- A short case study investigation of the research phenomenon was conducted with a mobile Tuk-tuk organisation based in the Western Cape (Chapter 4). ANT was applied as a theoretical lens to analyse the research phenomena (Chapter 4).
- The thematic analysis method as well as Atlas ti were used for analysing the data (Chapter 4).

The next section presents the consolidated research findings from the study participants.

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5.2.1 Consolidated Research Findings

As discussed in Chapter 1 and further expounded in Chapter 2 and Chapter 4, the expanded access and use of ICTs especially the mobile phone and the Internet are fundamental to the development and growth of developing economies (Chacko and Harris, 2006). Whilst penetration and use of ICTs in the African continent has increased over the past years, current measures indicate only 29% usage which is well below the global average of 46% (Kemp, 2016). Empirical data from this study aligns with the literature findings relating to ICT usage. All the participants of this study use ICTs for personal and business purposes. However, the type and usage varied based on the following aspects, type of business, ICT skills, and costs associated with the ICTs.

In alignment with the findings of Frempong (2007), mobile phones were found to be frequently used by small and micro enterprises for business purposes due to their ease of use and lower costs compared to other modern ICTs. The ICTs found to be in frequent use by the study participants include mobile phones, the Internet, email and social media platforms including Facebook, twitter, WhatsApp and Instagram.

As discussed in Chapter 4, small businesses have various information needs which are fulfilled though the use of ICTs. The respondents indicated that they use ICTs for the following reasons:

- Communication with family, friends, suppliers, staff members, colleague.
- Acquiring the latest information on pricing, latest trends in the market and government tenders.
- Conducting research and learning new knowledge and skills.
- Conducting business activities e.g. preparing documents such as invoices, business proposals, business plans, progress reports, financial reports and other adhoc documents.
- Storing business and personal information using technologies such as the cloud, external hard drives, memory sticks and servers.
- Facilitating personal and business financial transactions e.g. Internet banking and point of sale devices.

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SMMEs in developing counties are unable to realise all the benefits associated with ICT usage due to certain constraints. The constraints experienced by SMMEs include lack of financial resources, lack of ICT skills, complexity in usage, poor infrastructure, high cost of access to telecommunications, high cost of ICT equipment, lack of government policy on ICTs (chapter1, section 1.2; Chapter 2, section 2.4.2; Chapter 4, section 4.4.8).

The use of ICTs may offer a number of opportunities for SMMEs to survive and compete in the global market. These common benefits mentioned in literature and from the empirical evidence include rendering access to knowledge and information, improving business related communication, reducing costs, improving decision-making, responsiveness and efficiency, as well as improving overall flexibility in the business (Chapter 1, section 1,1; Chapter 2, section 2.4.3; Chapter 4, section 4.4.9).

The question of how ICTs contribute to poverty reduction revolves around issues of access and usage of different ICTs by the SMMEs. As discussed in Chapter 2, poverty reduction involves improvement in people's material and non-material lives. To discuss how ICTs, contribute to poverty reduction, the analysis in this study draws on arguments that view ICTs as tools that enable people's activities in order to improve their lives (Gigler, 2011). In this sense, to reiterate the perspective from Sen (1985), it is not just access to ICTs but what people are able to do with them that is useful in looking at how they contribute to poverty reduction.

Based on empirical evidence a number of key themes on how ICTs enable poverty reduction or improvements in their livelihoods include the following:

- The use of ICTs has enabled SMMEs to engage in economic activities to earn a living (Chapter 4, section 4.2 and 4.3; Chapter 5, section 5.2.1). Case in point, the mobile Tuk-tuk initiative has enabled the township unemployed youth to become entrepreneurs.
- Findings show that the use of various social medial platforms as well as doing research on the Internet stimulated and motivated people's interest and increased their awareness of economic activities that they can undertake (Chapter 4, section 4.4.9)

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- ICTs, particularly mobile phones, enable the SMMEs to obtain the latest information on personal and business related matters (Chapter 1; Chapter 2; Chapter 4, section 4.2; Chapter 4, section 4.6.1)
- ICTs also enable SMMEs to plan their days in terms of the economic activities they can engage in to earn a living (Chapter 2; Chapter 4, section 4.2; Section 4, section 4.6.1).
- Travel time and transportation costs have reduced due to use of ICTs. SMMEs save on the cost of transport and the pain of walking long distances or spending a lot of time in public transport (Chapter 2; Chapter 4, section 4.2; section 4.3 and 4.4.9)
- SMMEs are able to conduct financial transactions on their phones such as mobile banking or use mobile point of sale devices (Chapter 2, section 2.5.2; Chapter 4, section 4.2 and 4.3)
- The use of ICTs results in a reduction in vulnerabilities. For example, through conducting research on the Internet and using social media platforms, a farmer was able to find the most effective irrigation methods to save water and improve the quality of produce during a drought (Chapter 2, section 2.14; Chapter 4, section 4.2 and 4.3)
- ICTs contribute to the acquisition of educational information, agricultural knowledge, and skills that SMMEs utilize in activities that improve their lives (Chapter 4, section 4.4.9)
- From an economic perspective the use of ICTs contributes to initiation of income generation activities and has increased SMME's income (Chapter 2, section 2.4.3; Chapter 4, section 4.3; 4.4.9 and 4.5).
- Institutions such as the government and the private sector play an important role in the acceleration of SMMEs by enabling adoption and access to ICTs. This is evident from the government programmes and plans aimed at addressing the constraints on poverty, unemployment and inequality (Chapter 2, section 2.3.1). Empirical evidence from the participants provides recommendations on the role that government and the public sector need to play in order to address some of the challenges experienced by the SMMEs relating to ICT access. The recommendations include improved policies relating to ICT access for SMMEs and accelerating the roll-out of skills development initiatives to equip SMMEs with business and ICT skills. (Chapter 4, section, 4.4.10).

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- The application of ANT on the mobile Tuk-tuk case study provides valuable insights on the role played by various human and non-human actors in a network. This analysis highlights the importance of actors at the global network level in ensuring successful implementation of the pilot project by the actors in the local network through the translation process.
- This analysis further explains the importance of ensuring strong interactions amongst the actors to attain positive outcomes (Chapter 5, section 5.2.1).

Table 26 below presents a summary of the triangulated research findings and maps the relevant research questions.

Table 26: Summary of Findings. Source (compiled by author)

Finding	Description of empirical finding
Types of ICTs used by SMMEs	The findings below are discussed in (chapter1; chapter 2, section 2.4, section 2.5; chapter 4, section 4.4.7) SMMEs use the following types of ICTs: • Mobile phones • Internet • Email • Social media platforms (WhatsApp, Facebook, Twitter, Instagram etc.). Mobile phones are frequently used form of communication especially amongst small and micro enterprises. Most of the study participants make use of smart phones to browse the Internet. The usage of social media platforms was reported by all the study participants. Small and micro enterprises use social media platforms extensively for marketing their businesses and acquiring new clients.
The reasons for using the ICTs	The findings are discussed in (chapter 2, section 2.4, 2.5; chapter 4, section 4.4.9) The SMMEs use ICTs for the following purposes: • Communicate with friends, family, business partners, staff members, supplier etc. • Acquire information to stay up to date with the latest news or developments in the market • Acquire information on government tenders • Conduct research on personal and business matters • Conduct business and personal activities • Storing business and personal information

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Finding	Description of empirical finding
ICT usage Barriers	The findings are discussed in (chapter1; chapter 2, section 2.4.2 chapter 4, section 4.4.8) The ICT usage barriers raised by the SMMEs include: • Complexity in usage • High hardware and connectivity costs • Lack of digital literacy • Unreliable network The barriers raised above align to previous research conducted in ICT usage by SMMEs. Some of the barriers such as complexity in use and lack of digital literacy were mostly mentioned by participants in small and micro enterprises. High cost of ICTs and unreliable networks were raised by participants across the various business sizes. This is similar to the literature that cites affordability as one of the biggest challenges in accessing and using ICTs (Waema et al., 2007).
The Benefits of ICT usage	The findings are discussed in (chapter 1; chapter 2, section 2.4.3, and chapter 4, section 4.4.9) The ICT benefits raised by the study participants include • Improved administrative efficiencies • Cost efficiency • Improved business efficiencies • Eliminates the risk of theft • Enhanced Human Capability • Time Efficiency • Informed decision making • Facilitates Virtual business • Improved income • Reduction in vulnerabilities The use of ICTs enables the SMMEs to improve their business operations and improve turnaround times when delivering products or services to customers. The business owners are able to innovate and stay relevant in the market through leveraging the use of ICTs. Some participants have reported a decrease in costs and increase in turnover as a result of using the technologies. A shift in the business model for some businesses from brick and mortar to virtual is one of the benefits that was raised by the participants.

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Finding	Description of empirical finding
How ICTs enable poverty reduction	The findings below are discussed in (Chapter 1; Chapter 2, section 2.5, Chapter 4, section 4.5) The following themes were presented in the findings on how ICTs can enable SMMEs to improve their livelihoods thereby reducing poverty: • Motivate SMMEs interest and increased their awareness of economic activities • ICTs enable SMMEs access to the latest information to engage in economic activities and earn a living. • Reduction in travel time and transportation costs allowing the SMMEs to redirect the saving to other essentials. • Reduction in vulnerabilities • Acquisition of educational information and enhancement of skills** • Initiation of income generation activities and increased SMME's income. ** Limited information was found on the use of ICTs to acquire human capital assets for SMMEs based on the studies that were reviewed in the literature (Makoza and Chigona, 2012; Adera et al., 2014). (Chapter 2, section 2.5.4).

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5.3. Construction of Conceptual Framework

5.3.1 Introduction

The objective of this section is to construct a conceptual framework based on the research findings. This study draws on the Sustainable Livelihood (SL) framework (Duncombe, 2007) and Actor-Network Theory (Callon, 1991) as the basis for the conceptual framework.

5.3.2 Towards a Conceptual Framework that describes the role and impact of ICT usage by SMMEs on poverty reduction

A framework is a structure that consists of a set of beliefs, ideas and rules used as a basis for making judgements and decisions (Hornby, 2005). Frameworks are commonly applied in research especially in situations where ideas and thoughts involving several interacting social events or phenomena. The variables that form the subject matter of investigation in research are usually viewed from theoretical perspectives as concepts which a study intends to test to determine their veracity (Okeyo, 2013).

This study draws on various approaches and frameworks applied in the literature to understand the role and impact of ICT use by SMME on poverty reduction. The various approaches and frameworks used in constructing the conceptual framework are discussed below.

5.3.2.1 The Sustainable Livelihood Framework

As discussed in Chapter 3, the SL framework is for understanding the multidimensional aspects of poverty and poverty reduction. The framework illustrates the different linkages between livelihood assets, vulnerability context, institutions, policies and people's livelihood outcomes (Messer and Townsley, 2003; Morse and McNamara, 2013). From an IS perspective, this framework assesses how the use of ICTs enables people to utilise available resources or livelihood assets, it further examines how ICTs affect the available resources and finally how people interact with ICTs.

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The SL framework emphasises the importance of capital or assets to which people have access or draw on, and the context within which they devise strategies to improve their lives. The framework recognises that the poor have access to five sets of assets, i.e. social, human, financial, physical and natural. These can also be referred to as social capital, human capital, financial capital, physical capital and natural capital. The term asset and capital are used interchangeably in this framework (DFDI, 2001). Each actor (SMMEs), in the case of this study may either own or have access to a unique set of assets. These assets further constitute the means within which the SMMEs develop livelihood strategies (Duncombe, 2007). Bebbington (1999) argued that capital assets are not simply resources that people use in building livelihoods, they are assets that give them the capability to be and act. Sen (1997), states that the possession of human capital assets do not only enables people to produce more and more efficiently, it also gives them the capability to engage more fruitfully and meaningfully with the world and provides them with the ability to change the world.

The choices that people make are based on the opportunities and risks that prevail, these are referred to as vulnerability content in the SL framework. As discussed in Chapter3, the vulnerability context includes factors such price fluctuations, shocks from multiple root causes such as drought, political instability, trends in inflation and employment conditions amongst others. Vulnerability can increase because of lack of access to resources, weak economic integration, climatic problems, lack of economic opportunities and lack of a voice for the poor (Hulme and Shepherd, 2003).

The concept of structures and processes in the framework incorporates social and cultural factors that may influence livelihoods. This stage of the SL framework links macro and micro factors. The livelihood structures or institutions in the framework are public, private and non-governmental organisations that set and implement policy, deliver goods and services and a wide range of functions (Duncombe, 2007). The structures and processes are accessible to the people to enable their strategies. At the same time these structures can inhibit people's possibilities by controlling access to those assets, or by influencing how, where and by whom they are used (Messer and Townsley, 2003; Duncombe, 2007; Adera et al., 2014).

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The ICT system consists of three components, namely technical, economic and social. The technical sub-system comprises end-user technologies, networks, applications for use and access to infrastructure. The economic sub-system comprises economic institutions, including markets, enterprises and consumers, cost structures and regulatory frameworks. The social sub-system comprises social actors being communities, enterprises, and individuals; political processes, social interaction and networks, as well as the context of what is being delivered (Adera et al., 2014).

Based on the discussion above, the interactions between the various components of the SL framework depict that SMMEs work within all these factors i.e. the risks they face (vulnerability context), the assets they own or have access to, the various components of the ICT system, the government system and the private sector. The SMMEs can further use these factors to weave livelihood strategies which result in livelihood outcomes (Adera et al., 2014; Duncombe, 2007). The livelihoods outcomes can include increased income and savings, improved livelihood options, reduced vulnerability to risks etc.

The SL framework is operationalised in this study by drawing from the argument by Sen (1999), which states that what matters in people's well-being is what they are capable of being or doing with the goods to which they have access. Bebbington (1999), developed a conceptual framework that was adapted from the SL approach which highlighted the importance of combining capital assets with capabilities.

This sub section shows how the SL framework is adapted to reflect the research findings of this study. The conceptual framework constructed in this study places human action rather than technology at the centre and emphasises the relationship between technology and social context (Avgerou, 2001). The conceptual framework also seeks to broaden the understanding of the impact of ICT usage on SMME's social, economic and organizational well-being. The various elements of the adapted conceptual framework are discussed in the next section.

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5.3.3 Elements of the Conceptual Framework

5.3.3.1 Capital Assets

The systematic view of ICTs developed by Heeks (1999) emphasised the importance of separating technology and the information on which it operates. Heeks (1999) further states that information and communication technologies cannot be understood unless one understands information and its role. The diagram below (Figure 31) depicts the systematic view of information and communication technologies developed by Heeks (1999) which places information as an important aspect of the model.

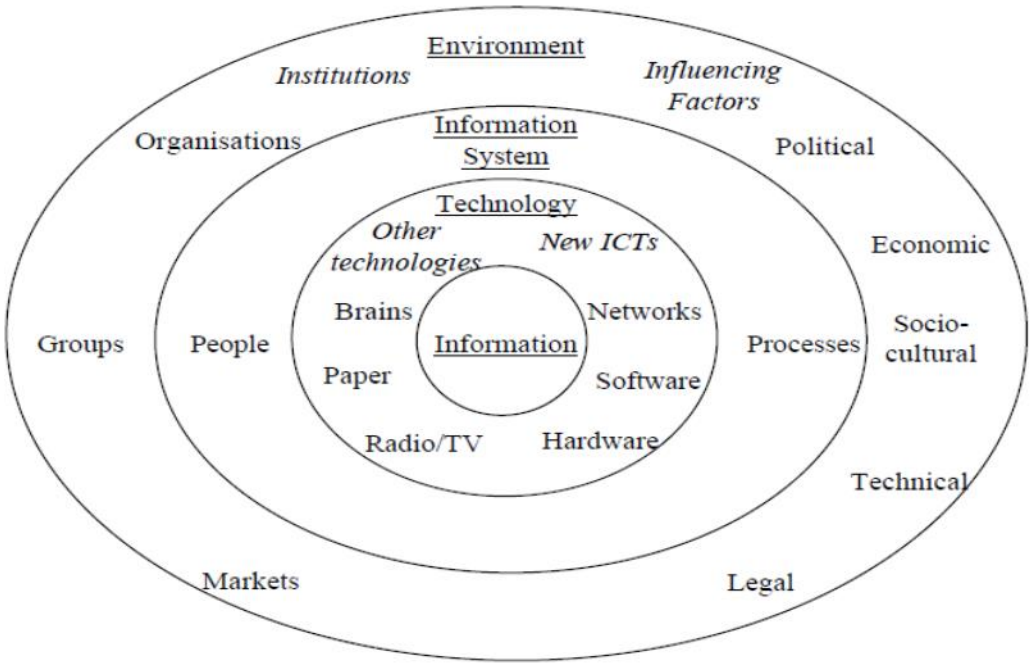

Figure 31: A Systematic View of information and communication Technologies. Source (Heeks, 1999)

Empirical evidence from the study reveals that SMMEs require various types of information for personal and business purposes. From a business perspective these enterprises need information relating to pricing, market opportunities, raw materials, latest techniques to address environmental factors.

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The various types of information that SMMEs acquired using ICTs enabled them to execute their work more efficiently, make informed decisions which ultimately have an impact on business outcomes such as increased income. Bebbington (1999), suggested that people's capital assets affect the poverty status and quality of their lives by enhancing human experience as well as income. Based on the arguments above, this study introduces information as an additional capital asset in the SL framework as depicted in Figure 32.

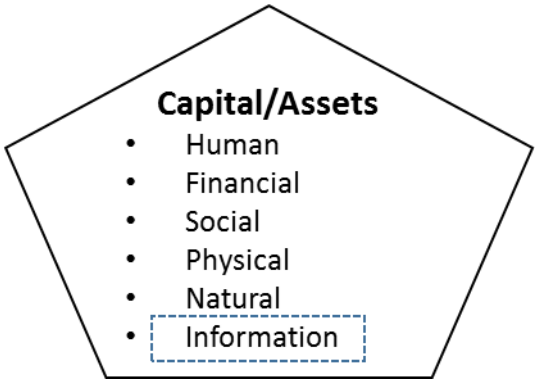

Figure 32: Capital Assets. Source, adapted from (Duncombe, 2007)

Empirical evidence from the study indicates that SMMEs use ICTs to acquire new skills or improve existing skills and capabilities. Some of the respondents enrolled in formal education in the form of online courses to enhance their skills. Other participants used other platforms such social media to engage with others to access information and acquire knowledge. The use of the Internet was also mentioned by the participants as a tool that enabled them to conduct various forms of research required in their businesses. The findings of this study contradicts those which found limited information on the use of ICTs to acquire human capital assets (Duncombe, 2007); Makoza and Chigona (2012). Sen (1999), recognised the importance of human capital in making people more efficient in their jobs and ultimately improve their income. Based on the empirical evidence which is supported by literature Sen (1999), the use of information acquired by SMMEs through various ICTs enabled the acquisition and or improvements of other assets such as human and financial assets.

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Thus this substantiates the argument of classifying information as a capital asset as its use results in interaction with other assets and improvement in livelihoods (Bebbington, 1999).

5.4.3.2 The ICT System

When considering the application of ICTs, it is important for SMMEs to understand the role that ICTs play in their value chain. This will enable the SMMEs to use the relevant ICTs based on their needs in order to realise business benefits (Duncombe and Heeks (2005). The four roles of ICTs for SMMEs as defined by Duncombe and Heeks (2005) are integrated into the ICT system on the SL framework to broaden the understanding of the technical sub-system and make it relevant to SMMEs as shown in Figure 33. The four ICT roles as defined by Duncombe and Heeks (2005) are explained below:

- Value chain core: This role entails the use of ICTs to enable the core operations of the enterprise e.g. IT sector enterprises that produce tangible (computers, networks e) or intangible (software, webpages) ICTs as outputs.
- Value chain boundaries: This role refers to when ICTs are used for interacting with suppliers or customers.
- Value chain support: This role relates to the use of ICTs for accessing information and for enabling decision making.
- Networking support: This role entails the use of ICTs to build networks with stakeholders that are part of the value chain.

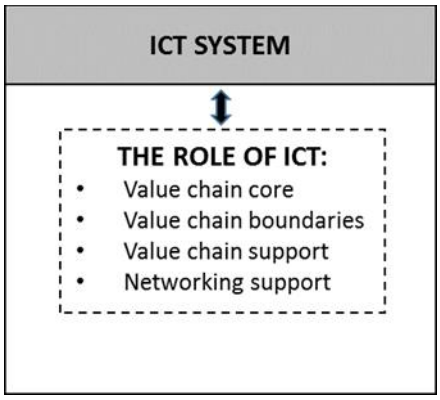

Figure 33: The ICT system: The role of ICT. Source, adapted from (Duncombe and Heeks, 2005)

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The actual use of ICTs by SMMEs is a critical precondition for ICTs to have an impact on livelihoods. The ICT impact chain framework developed by Gigler (2011) differentiates between the use of ICTs and meaningful use of ICTs. The notion of ICT use encapsulates simple use of ICTs without specifying proficiency, while meaningful use captures the depth, usefulness and level of expertise in the use of the technology. The following conditions have to be met to enable users to realise meaningful use of ICTs: enhancement of their ICT capabilities through skills training, availability of local and relevant content, financial and social sustainability of ICT programmes (Gigler, 2011). Figure 34 depicts the enhanced IT system.

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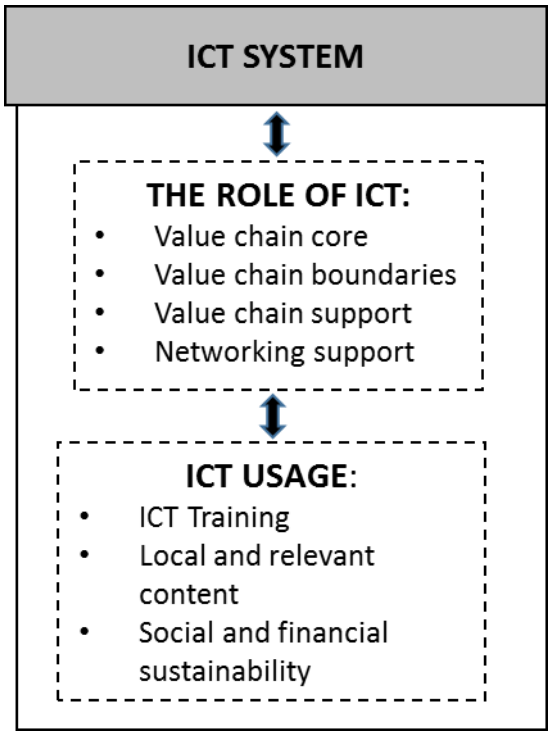

Figure 34: The ICT System: ICT Usage preconditions: Source: adapted from (Gigler, 2011)

5.4.3.3 Transforming Structures and Processes

The structures and processes on the SL framework are accessible to the people to enable their strategies. These structures can at the same time become barriers of intended outcomes by controlling access to assets (Messer and Townsley, 2003; Duncombe, 2007; Adera et al., 2014). The application of ANT on the mobile Tuk-tuk case study provided insights on the various human and non-human actors.

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The application of ANT highlights the importance of interactions between the local and global actors to ensure success of the initiative. For the purposes of this study, the structures on the SL framework are associated to global actors and SMMEs are local actors. The conceptual model borrows from the ANT processes of translation i.e. interessement and enrolment (see Figure 35).

The interessement and enrolment processes of ANT emphasise the need to build strong links which make the network irreversible. The application of interessement and enrolment processes on the conceptual framework is aimed at building a solid network amongst all the human and non-human actors comprising of structures, the ICT system, assets and vulnerability context to achieve successful outcomes.

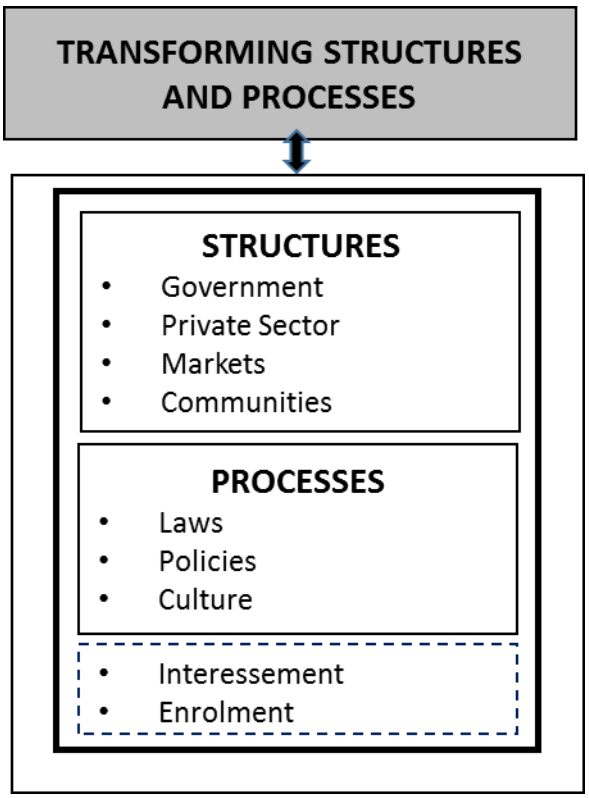

Figure 35: Enhanced Structures and Processes, adapted from (Callon, 1991)

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5.4.3.4 Strategies for Minimising ICT Barriers

As discussed in Chapter 2, section 4.4.10, the barriers associated with ICT adoption and use require strategies to be put in place to curtail their undesirable impact. The benefits of ICT use can only be realised when institutional foundations such as affordable telecommunication infrastructure, legal and regulatory policies and local credit management infrastructure are in place (Heeks et al., 2008).

Empirical findings from the study respondents' highlights ICT usage barriers and provides recommendations on how these barriers can be overcome. The recommendations allude to the need for institutional support from the government and the private to accelerate ICT usage by SMMEs. The conceptual framework incorporates the strategies for minimising ICT barriers as defined by Ongori and Migiro (2010). These strategies are depicted in Figure 36, they include the financing strategy, infrastructure strategy, human capital strategy, and the legal framework strategy.

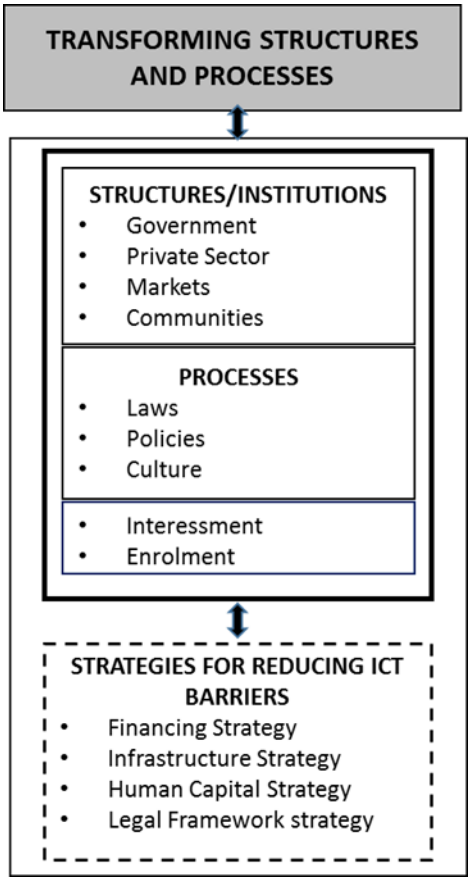

Figure 36: Strategies for minimising ICT usage barriers (Source: adapted from Ongori and Migiro, 2010)

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5.4.3.5 Livelihood Outcomes

Livelihood refers to a means of making a living which includes the use of assets, access to institutions and processes and ICT systems that a person uses to achieve a livelihood outcome. The concept of livelihoods in the SL framework was utilised as an attempt to emphasis the broad definition of poverty (Ashley and Carney, 1999).

In their study, Heeks and Molla (2009) defined the Information Technology for Development (ICT4D) value chain model for assessing the impact of ICT initiatives. According to the model, the impact of ICTs is assessed based on the following elements:

- Output: The behavioural changes associated with the use of ICTs e.g. new communication patterns, new decisions, new actions and transactions.
- Outcomes: Financial, qualitative and quantitative costs and benefits associated with ICT usage.

The findings from the literature and empirical data highlights a number of economic benefits or business outcomes that SMMEs can derive from using ICTs. The key business outcomes that emerged include increase in business turnover, improved productivity; improved access to markets, improved cost efficiencies, administrative efficiencies as well as improved flexibility (Ongori and Migiro, 2009; Barbara-Sanchez et al., 2007; Qureshi, 2005; Tarafdar, 2012; Mbuyisa and Leonard, 2016). The theoretical model defined by Qureshi (2005) on the effects of ICTs on development suggests that ICTs can aid SMMEs to attain the greatest benefits in terms of administrative efficiency, labour productivity, competitiveness and access to new markets. The positive effects of ICTs can stimulate a positive spiral of social and economic outcomes, ultimately resulting in poverty reduction (Zaremohzzabieh et al., 2016).

The research findings confirm that the usage of ICTs by SMMEs improved the ability to communicate and share information with various stakeholders including friends, family members, suppliers and colleagues. The usage of ICTs created convenience and saved time for the SMMEs (Makoza and Chigona, 2012). Sen (1999) indicates that the concept of human capital needs to be enhanced as it only views people as means of production.

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Empirical data from this study indicates that ICTs enable SMMEs to access relevant information, enhanced their skills and knowledge and make decisions in a more informed way. Based on this argument, this study enhances the SL framework as informed by the work of Sen (1999) by incorporating human capabilities as an output that can be achieved by SMMEs through enhanced capital assets. Human capability enhances the concept of human capital as it focuses on the ability of human beings to lead lives they have reason to value and to enhance the choices that they make. The ICT4D value chain assessment model by Heeks and Molla (2009), is applied to reflect the impact of ICTs by regrouping the livelihood outcomes and depicted in Figure 37:

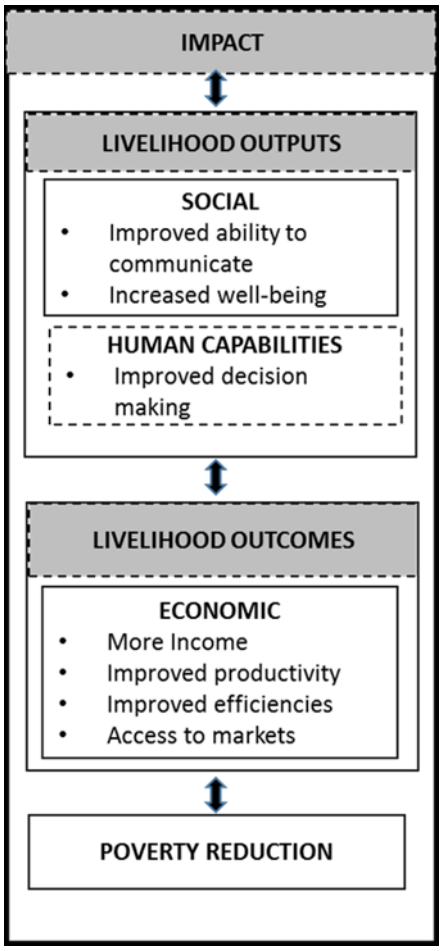

Figure 37: Enhanced Livelihood outcomes. Source, adapted from Duncombe, 2007; Sen, 1999)

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The livelihood outputs and outcomes can be either economic, social or enhanced human capabilities; these could result from the combination of livelihood assets at the disposal of the SMMEs, the vulnerability context in which they operate and the policies, institutions and processes, including the ICT system that they use. Livelihood outcomes can vary from adequate to inadequate. In this regard poverty can be thought of as an inadequate livelihood outcome, while poverty reduction is viewed as a favourable livelihood outcome in terms of improvement in the business owner's material or non-material lives (Messer and Townsley, 2003; Adera et al., 2014).

Poverty reduction is regarded as multidimensional and includes increase in income; participation in governance and enhanced voice; increased access to goods and services; acquisition of education in terms of knowledge and skills; reduced vulnerability and the ability to adapt to natural and economic shocks (Harris, 2004). Poverty reduction therefore incorporates economic and social aspects of people's lives and entails different kinds of change that affect social, economic and political aspects. Favourable livelihood outcomes (poverty reduction) because of meaningful ICT use by SMMEs will result in the creation of new livelihood assets or enhancement of existing assets (Duncombe, 2007). The conceptual framework for this study is depicted in Figure 38.

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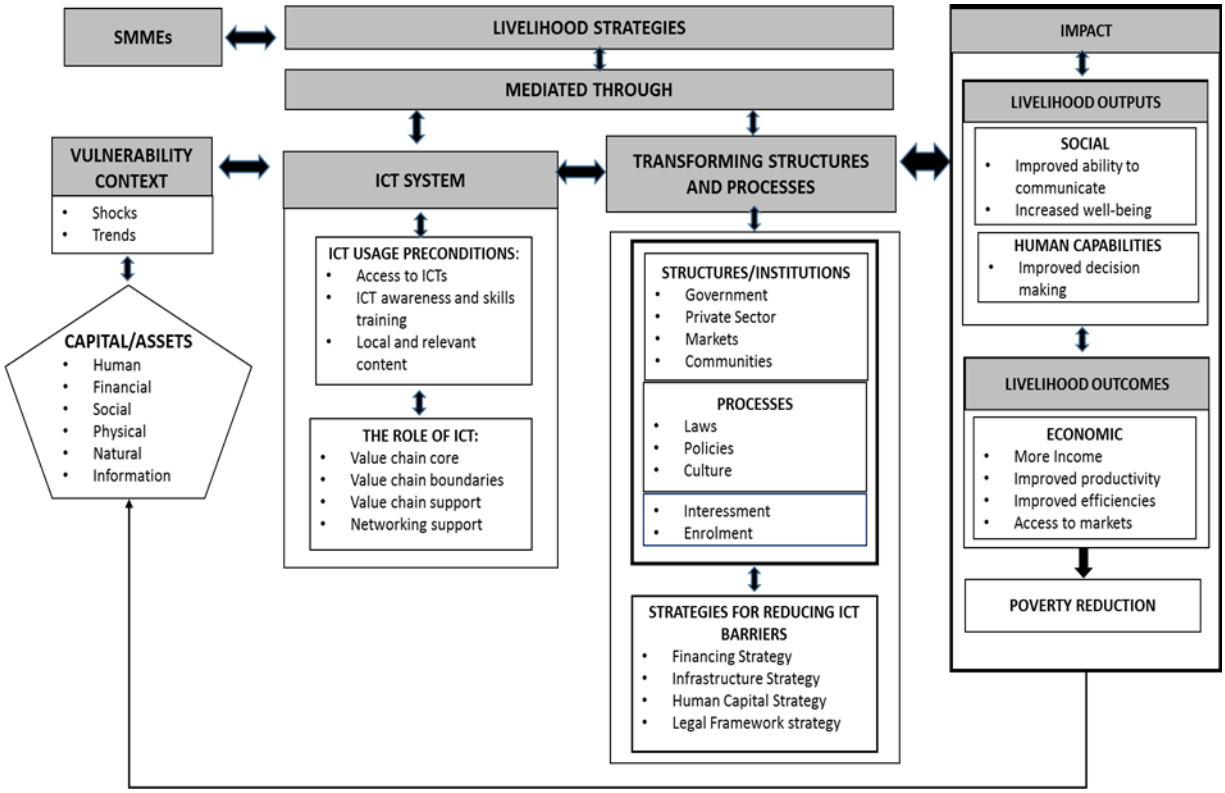

Figure 38: Proposed Conceptual framework for ICT use by SMMEs towards poverty reduction

5.4.3.4 Model Constructs

Several concepts were used in the construction of the conceptual framework for this study, these constructs that were used to amend the SL framework are outlined in Table 28.

Table 27: Model construct. Source (compiled by the author)

Model Component	Description	Reference
Capital Assets: • Information	Information was added as an additional capital asset in the SL framework. The use of information interacted with and improved other assets.	(Bebbington,1999; Heeks, 1999)
The role of ICTs: • Value Chain Core • Value chain boundaries • Value chain support	The role played by ICTs in SMME's value chain. The role of ICTs is incorporated in the model to improve the understanding of the	(Duncombe and Heeks, 2005).

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Model Component	Description	Reference
• Networking support	technical sub-system as it relates to SMMEs.	
ICT Usage: • ICT Training • Local and relevant content • Social and financial sustainability	This model component represents the pre-conditions required for meaningful usage of ICTs be attained in order to improve livelihoods.	(Gigler, 2011)
Processes: • Interessement • Enrolment	Interessement and enrolment are elements of the ANT process of translation. These processes ensure that a strong link is created amongst all the human and non-human actors in the network.	(Callon, 1991)
Strategies for reducing ICT barriers: • Financing strategy • Infrastructure strategy • Human Capital Strategy • Legal framework	Strategies for minimising ICT adoption and usage barriers. These strategies are employed by the relevant institutions to enable ICT adoption and usage by SMMEs.	Ongori and Migiro (2010)
ICT Impact: • Livelihood Outputs • Livelihood Outcomes	The ICT4D value chain assessment was used to depict the impact of ICTs by separating outputs from outcomes	Heeks and Molla (2009)
Livelihood Outputs: • Human capabilities	Human capabilities focuses on the ability of human beings to lead lives they have reason to value and to enhance the choices that they make.	(Sen, 1999); Heeks and Molla (2009)

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5.4 Validation of the Conceptual Framework

The conceptual framework above was presented to some of the interviewees that participated in the initial data gathering process. The researcher presented the proposed conceptual framework to the interviewees and asked them to provide their views. The objective of validating the conceptual model with the study participants was to test its relevance and accuracy. The feedback from the interviewees on the proposed conceptual framework is presented below.

5.4.1 Comments from Interviewees

The proposed framework was positively accepted by the interviewees. The general feedback from some of the interviewees on the proposed conceptual framework is presented below:

> *"The model resonates with me. It looks at the micro entrepreneur, it looks at interventions and I can see the impact at the end. I like that the model components look at factors inside the business as well as those outside the business"* (SMME_Business Consulting).

> *"I agree with the various elements of the model; the concept makes sense from the way that you explain it. As a small business owner I use technology on a daily basis without actually realising what the implications of that are. This picture actually sheds light on the different components very well"* (SMME_Bakery).

The section below presents feedback from the interviewees on the various components of the conceptual framework:

5.4.1.1 Capital/ Assets

> *"I agree with the types of assets that are presented on the model. I would however suggest a different categorisation of the assets for ease of understanding. The suggested categories should distinguish tangible from intangible assets i.e. tangible assets comprise of financial, physical and natural assets.*

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…. the category of intangible assets includes social, human and informational assets. This classification is relevant to the terms that are used in the business environment" (SMME_Business Consulting).

"I like the fact that information is included as an asset, this puts emphasis on the importance of this asset and how it should be treated in the organisation" (SMME_BusinessConsulting).

5.4.1.2 ICT Usage Preconditions

"Affordability is an important aspect when determining the choice of ICT to use. It is important to buy something that you can afford and will be in a position to maintain. ICTs require maintenance e.g. paying for repairs when the devices break, software licences, software upgrades, data costs etc." (SMME_Carwash).

"User friendliness of the technology is very important for me. If a technology is not user friendly I will not use it and may miss out on the benefits. User friendliness is a direct benefit of using ICTs as it improves my efficiency as an enabler" (SMME_BusinessConsulting).

"In my business we utilise mobile phones more than any other form of technology. This type of technology is easy to learn and use by technical and non-technical people. When I consider buying technical devices I first consider how easy or difficult is it to navigate and use" (SMME_Bakery).

"It is crucial for anyone who owns a business to acquire some form of business skills. These skills enable one to understand the basics required for running a business. Business skills can help the owner understand and plan what the business aims to achieve in the short term as well as in the long-run. I regard business skills as an important pre-condition that needs to be in place before investing heavily on technology. Before introducing ICTs in a business it is important to consider the following: be certain about the type of products or

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services offered, identify the target market or customer base, determine how the customers prefer to be contacted and how they want their products or services to be delivered. Once a business has defined a proper view of what it intends to achieve, it is only then that appropriate ICTs can be introduced to support the business" (SMME_BusinessConsulting).

"On the model, I see that you refer to the use of appropriate content. Appropriate content should be delivered on the correct ICT platform. The market is flooded with different types of technologies most of which are very costly for small businesses to afford. As a small business owner without technical expertise, it is difficult to identify the technologies that will meet my business needs and at the same time ensuring that it is easy to use. On that note, I mean that awareness of the technologies out there is absolutely crucial" (SMME_BusinessConsulting).

5.4.1.3 Structures and Processes

"International organisations such as the World Bank form part of the structures that shape some of the policies and programmes that we undertake in our country. A representation of these role players will add value in the model" (SMME_BusinessConsulting).

"The South African government through the Department of small business development plays an important role in supporting the small business environment through the various structures and programmes that are in place. I agree fully with acknowledging the role of government on the model, they are a very important role player. Another important role player that you have not included on the structures are Non Profit Organisations (NPO's) and business incubators that act as intermediaries between SMMEs, Government and the private sector. The role played by these organisations in the small business sector is very commendable, they bridge the skills gap and empower small businesses to grow" (SMME_Carwash).

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5.4.1.4 Impact of ICTs

> *"I believe that every business's social responsibility is to become profitable first. I suggest that on the model we start with economic benefits and then social benefits will follow as a consequence of the economic benefits. An example that I can make to illustrate this point is that if my business turnover increases, I will have more disposable income that can enable me to improve well-being"* (SMME_BusinessConsulting).

5.4.2 Refined Conceptual Model

Subsequent to the follow-up interviews discussed above, the feedback was used as input for refining the conceptual framework. The conceptual framework was amended to include the following components:

- Capital Assets: The classification of assets was amended. A grouping of the assets was made to distinguish tangible versus intangible assets.
- Pre-requisites for ICT usage: Affordability of ICTs and ease of use were highlighted as important pre-conditions that SMMEs consider before utilising ICTs. These elements were included in the framework.
- Structures and institutions: The interviewees raised additional institutions that play an important role in the development of small businesses. Institutions such as the international bodies and intermediaries were included in the mode.
- ICT impact: The livelihood outcomes (economic benefits) were positioned before the livelihood outputs (social benefits).

The amended conceptual framework which takes into account feedback from interviewees is presented in Figure 39.

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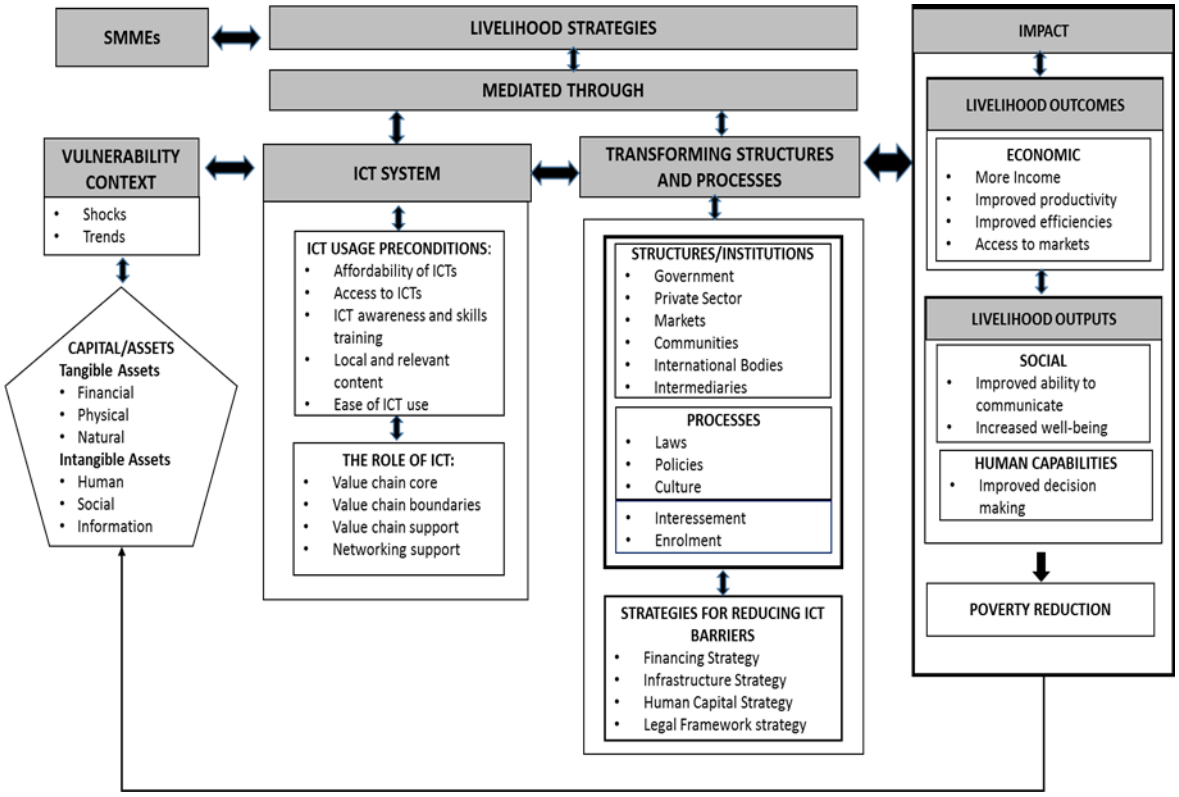

Figure 39: Refined Conceptual Framework

As suggested by the interviewees, the refined conceptual framework encompasses important elements relating to how SMMEs utilise and interact with ICTs. The element highlights various stakeholders that enable or hinder the interaction with ICTs. The impact of ICT usage from an economic and social perspective is also articulated. The interviewees confirmed practicality and relevance of the model in the SMME environment.

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5.5. Concluding Summary

This Chapter presented the conceptual framework that was constructed for this study. The conceptual framework is drawn from other existing frameworks and models and is also informed by empirical evidence. The discussion presented in this section indicates the use of ICTs under certain conditions can enhance SMMEs human, social and economic well- being. New constructs were added on the SL framework to enhance its ability to evaluate the impact of ICT usage. The new ideas added to the model include information as an additional capital asset due to its ability to improve other assets as well as enhancing income and livelihood outcomes.

The IT system was further advanced by incorporating the four roles of ICTs for SMMEs defined by (Duncombe and Heeks, 2005). This addition on the model improves the context of the ICT system and makes it more relevant for SMMEs. The roles that ICTs fulfil are different for the various business types, this is highlighted on the conceptual model. The interessement and enrolment processes of ANT were used on the model to ensure strong linkages between human and non- human actors in network. The barriers associated with ICT adoption and usage raised a need for incorporating strategies defined in literature that can be used by the relevant structures to minimise the impact of the barriers. This study aligns with previous research which indicates that the relationship between ICT usage and poverty reduction is not a straight forward process. Certain conditions need to be in place before users of ICTs can enhance their human, economic and social well-being resulting in poverty reduction.

The conceptual framework presented in this Chapter addressed the research question on how existing models can be used as input for constructing a conceptual framework that will enable poverty reduction by SMMEs in South Africa. The next Chapter presents the conclusion and contribution made by this study.

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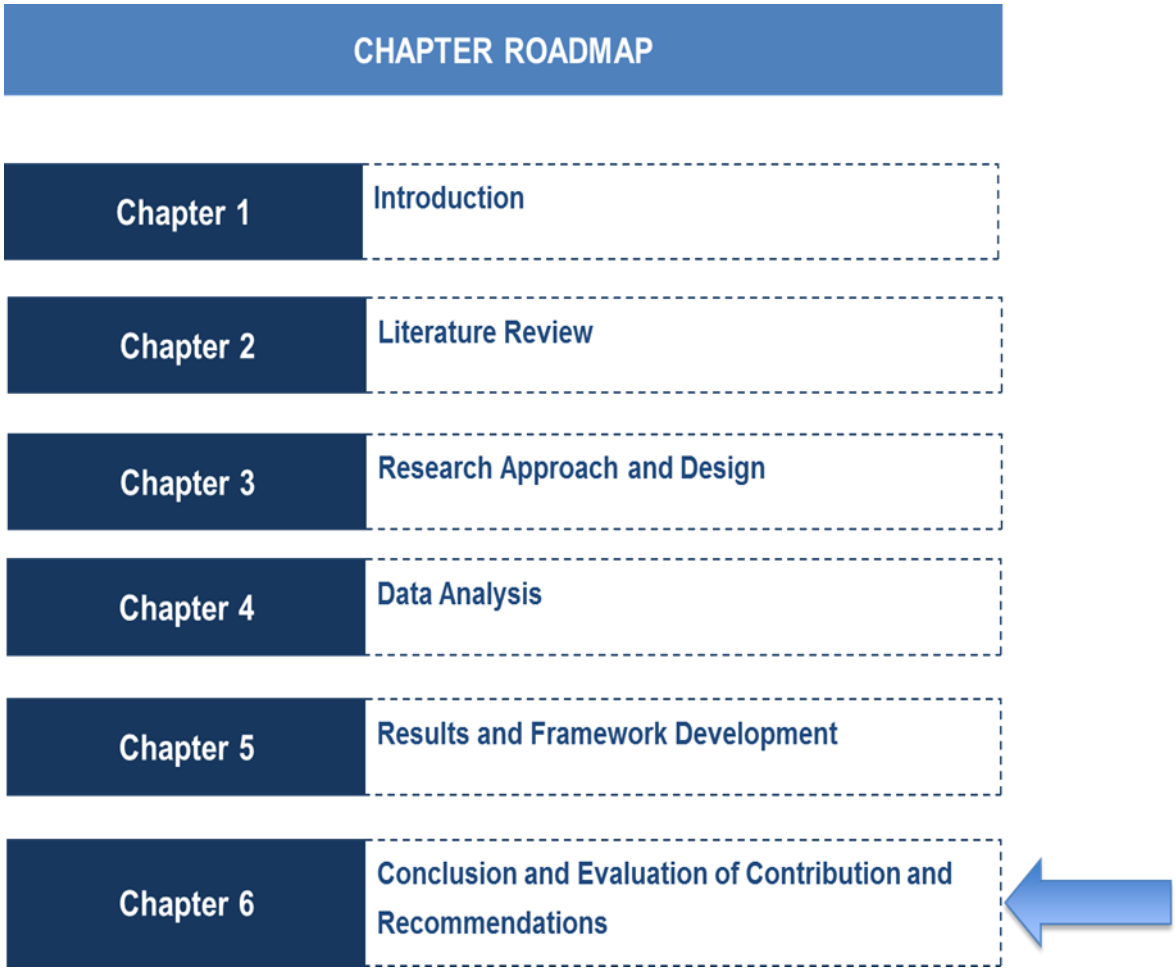
Chapter 6: Conclusion and Evaluation of Contribution



6.1 Introduction

The objective of this research study was to develop a conceptual framework contributing towards understanding of the role and impact of ICT use by SMMEs on poverty reduction in South Africa. To achieve this result, the researcher adopted an interpretive philosophical stance in collecting and analysing empirical data. Information for this study was collected by conducting a case study with a business support programme based in the Western Cape as well as in-depth interviews with ten SMMEs based in Gauteng. The Actor-Network theory and SL framework were used to analyse the research phenomena. Furthermore, ANT and the SL framework served as the basis for constructing the theoretical framework from the study findings.

Different businesses have different informational needs, the roles that ICTs fulfil differ based on the type of business as well as the maturity of the business enterprise. Information is considered a capital asset due to its ability to transform or create new assets. The conceptual framework developed in this study shows how the capital assets at the disposal of the SMMEs combined with their human capabilities can result in favourable or unfavourable impact on well-being. The conceptual framework also indicates that mere access to ICTs by the SMMEs does not result in improvements in well-being. A positive impact is determined by how the SMMEs use the ICTs that they have at their disposal.

At the start of the study, a set of research questions were posed. The first part of this Chapter addresses the research questions. Then, the research contributions of this study are evaluated, after which the final section outlines opportunities for further research.

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6.2 Addressing the Secondary Research Questions

In Chapter 1 section 1.4, the researcher posed a set of investigative questions on the role and impact of ICT usage by SMMEs on poverty reduction which the study set out to answer. The objective of this sub section is to answer the research questions in light of the empirical results attained from this study. The secondary research questions are addressed first, followed by the main research question.

6.2.1 Research question 1*:* Which ICTs do South African SMMEs use?

As discussed in Chapter 1 and confirmed in the literature review and empirical investigation SMMEs are an important source of growth for both developed and developing economies. Advancements in the global economy have created a need for SMMEs to leverage the use of ICTs in order to remain competitive and relevant in their markets. SMMEs use various types of ICTs for personal and business purposes. Aligned to previous research, the use of mobile phones exceeds that of other ICTs. The reason for the high usage of mobile phones is attributed to cost and ease of use compared to other ICTs. Internet usage also plays an important role in enabling the SMMEs to conduct various personal and business activities. However, such usage varied based on the information being accessed by the SMMEs. Social media has become a platform that enables the SMMEs to connect with various stakeholders including family and friends, business partners, employees, suppliers and customers. The use of social media has increased due to its ability to reach a high number of people at lower costs compared to other modern forms of communication. Empirical evidence indicates that the information needs for the various business types differ so is their usage of ICTs. Small and Medium enterprises have an increased need for interacting with other market actors and institutions. They have broader needs for workforce training, market access, costly and sophisticated forms of technology (Chapter 1, Chapter 2, and Chapter 4).

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6.2.2 Research question 2: Why do South African SMMEs use ICTs?

SMMEs use ICTs for engaging with various stakeholders in their value chain. As discussed in Chapter 2; Chapter 4, section 4.4.9), SMMEs use ICTs for the following reasons:

- Communicating with friends, family, business partners, staff members, supplier;
- Acquiring information to stay up to date with the latest news or developments in the market;
- Acquiring information on government tenders;
- Conducting research on personal and business matters;
- Conducting business and personal activities;
- Storing business and personal information.

The theoretical model for this study highlights the importance of understanding the reasons for ICT usage as the basis for the determining the role of the ICTs in the organisation. As evident in the empirical data, the role of ICTs differs for small, medium and micro enterprises based on the type of business and the maturity of the enterprise. Micro enterprises use basic and less expensive ICTs mostly for communication purposes. The more mature businesses including small and medium enterprises use a combination of simple and more complex ICTs to support their business processes.

6.2.3 Research question 3: What are the barriers of ICT usage experienced by SMMEs in South Africa?

As confirmed in previous studies and empirical evidence, SMMEs in developing countries are unable to leverage all the benefits associated with ICT usage due to constraints that hinder their adoption and usage. The barriers to ICT usage that were raised in the study include the following:

- Complexity in usage;
- High hardware and connectivity costs;
- Lack of digital literacy;
- Unreliable communications network.

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The conceptual framework indicates the importance of enhanced capabilities as an important aspect for ensuring useful usage of ICTs. The use of intermediaries has been raised in literature and from empirical evidence as a way of bridging the skills gap to improve ICT usage for SMMEs.

6.2.4 Research question 4: What are the benefits of ICT usage experienced by SMMEs in South Africa?

The use of ICTs is associated with a number of economic business outcomes for the SMMEs. These outcomes enable the SMMEs to improve their business operations by improving economies of scale and increasing income. The business owners are able to innovate and stay relevant in the market through leveraging the use of ICTs. The use of ICTs has proven to have positive economic benefits through enabling SMMEs with the ability to operate virtually thus eliminating the need for maintaining costly physical structures. The benefits for ICT usage by SMMEs include the following:

- Improved Efficiencies;
- Administrative efficiencies;
- Cost efficiencies;
- Business efficiencies;
- Time efficiencies;
- Eliminates the risk of theft;
- Enhanced Human Capability;
- Informed decision making;
- Facilitates virtual business;
- Improved income;
- Reduction in vulnerabilities.

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6.2.5 Research question 5: How can existing models be used as input for constructing a conceptual framework that will enable sustainable poverty reduction by SMMEs sector in South Africa?

This study draws on the SL framework and ANT to construct a conceptual framework that enhances the understanding of the role and impact of ICT usage by SMMEs towards poverty reduction. The resulting model adapts the SL framework by Duncombe (2007) by integrating the following components:

- The systematic view of ICTs developed by Heeks (1999): This component of the conceptual framework emphasises the distinction between information and the technologies on which it runs. Information is regarded as a capital asset which results in the expansion or improvement of other assets resulting in the improvement of people's well-being.
- The four roles of ICTs for SMMEs as defined by Duncombe and Heeks (2005): Based on empirical evidence and literature studies, it is evident that the roles of ICTs differ depending on the type of business as well as its maturity. The work of Duncombe and Heeks (2005) enhance the SL framework by providing a way to understand the role that ICTs play in the organisation.
- The ICT impact chain framework developed by Gigler (2011): The component distinguishes between the use of ICTs and meaningful use. The pre-conditions required to ensure that the use of ICTs is meaningful and sustainable are incorporated on the IT system in the SL framework.
- The ICT4D value chain assessment Heeks and Molla (2009), was used to depict the impact of ICTs by separating livelihood outputs from livelihood outcomes.
- Actor-Network Theory translation processes (Callon, 1991). The ANT process of interessement and enrolment were included as part of the SL processes. The interessement and enrolment processes are aimed at ensuring that the local actors maintain a strong link with all other actors in the network in order to attain positive livelihood outcomes.
- Strategies for minimising ICT barriers (Ongori and Migiro, 2010). The strategies for minimising ICT barriers for ICT usage were incorporated in the framework. These strategies interact with the structures and processes in order to reduce the impact on SMMEs.

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- Capability approach Sen (1999): This component of the conceptual framework uses a people centred approach that recognises the use of people's capabilities to improve their well-being. The capability approach results in human capabilities being added as a livelihood outcome stemming from the use of ICTs. The conceptual framework provides evidence on how the use of ICTs can strengthen human and social capabilities.

6.3 Addressing the Main Research Question

The main research objective for this study is to explore how ICT usage by SMMEs can enable poverty reduction in South Africa. This objective is transformed into the main research question:

How can ICT usage by SMMEs be used towards poverty reduction from a South African context?

The conceptual framework constructed in this study maps out various key themes from empirical findings which provide evidence on how the usage of ICTs enable poverty reduction or improvements in the livelihoods of the SMMEs. The key themes are outlined below:

Economic outcomes:	• The use of ICTs motivates SMMEs interests and increases their awareness of economic activities • ICTs enable SMMEs access to the latest information to engage in economic activities and earn a living. • ICTs result in the reduction in travel time and transportation costs allowing the SMMEs to redirect their savings to other essential activities. • ICTs enable improvements in cost and time efficiencies • The use of ICTs by SMMEs result in the initiation of income generation activities and increased income. • ICTs such as social media platforms enable SMMEs the advertise their businesses thereby gain access to wider markets.
Human capabilities:	• ICTs enable SMMEs to acquire educational information • The use of ICTs enables the SMMEs to enhance their skills e.g. business management skills, computer skills, improved ability to use different ICTs.
Social Capabilities	• The improvement in human capabilities in the form of learning new skills because of ICT usage may result in the strengthening of SMMEs self-esteem and improved sense of inclusion and acceptance in the digital society.

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	• ICTs make it easier for the SMMEs to find, evaluate and utilise different sources of information. • SMMEs are able to make informed decisions more timeously through the use of ICTs. • The use of ICTs enables the SMMEs to improve their ability to communicate with family members, friend, suppliers, staff members, business partners etc.
Reduction in vulnerabilities	Based on empirical evidence, the use of ICTs enabled a farmer to learn new irrigation techniques which improved the quality of produce and minimised the impact of the drought.

6.4 Evaluation of Contribution to Knowledge

6.4.1 Introduction

This study has contributed to the body of knowledge from a theoretical, methodological and practical perspective. This section discusses the theoretical, methodological and practical contributions made by this study. It further articulates the researcher's attempt to adhere to the guiding principles for interpretive research.

6.4.2 Assessing the Contributions of this Study

6.4.2.1 Theoretical contribution

Various studies have been conducted by scholars to articulate what it means for a research to make a theoretical contribution (Bartuken et al., 2006, Kilduff, 2006, Rindova, 2008. One of the difficulties associated with determining the theoretical contribution stems from the lack of consensus on what theory is (Corley and Gioia, 2011). Sutton and Staw (1995) define theory as "a statement of concepts and their interrelationships that show how and/or why a phenomenon occurs".

Corley and Gioia (2011), suggest that the existence of theoretical contribution is attributed to originality and utility of the research study. As discussed in Chapter 1 and Chapter 2, limited studies have been conducted on the relationship between ICTs, SMMEs and poverty reduction.

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In Chapter 2, the author used the systematic literature review methodology to rigorously examine previous research. The principle of hermeneutic was applied during the literature review by identifying the various actors (ICTs, SMMEs and poverty reduction) and examining literature that covered areas where they interconnect. The thematic findings presented in the literature study provide a valuable contribution by recognising existing knowledge and then outlining gaps as highlighted by scholars in the field.

This study followed an interpretive approach to gather more insights on the phenomena by engaging with various small, medium and micro enterprise business owners. The principle of interaction was achieved through in-depth face to face interviews with ten SMMEs in Gauteng and a case study with an enterprise development organisation in the Western Cape. As discussed in Chapter 2, previous empirical studies that the researcher reviewed on the role and impact of ICT usage focused on micro enterprises and communities. The contribution made by this study is that the unit of analysis included all the segments of the small business sector (small, medium and micro). This assisted with gaining insights from the different business owners relating to their interactions with ICTs.

The principle of suspicion was addressed by applying the triangulation process to reduce bias on the research findings. The thematic analysis method, SL framework, ANT and Atlas.ti were used to analyse empirical data (Chapter 4). The use of the SL framework provides a structured approach for analysing various elements associated with poverty reduction relating to SMMEs. The application of the SL creates a big picture context away from the linear cause and effect thinking that is often used in ICT related initiatives. The use of ANT for analysing the empirical data further upheld the importance of understanding the various actors and ensuring strong interactions between them in order to achieve favourable outcomes.

The triangulated research findings informed the construction of the conceptual framework presented in Chapter 5. The conceptual framework constructed in this study is drawn from various models and frameworks. Therefore, the contribution made by this study was the enhancement of the SL framework.

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Empirical findings served to confirm the model constructs presented in literature and then further augmented with new findings. The combination of ANT and SL framework as the basis for analysing the data and constructing a conceptual framework has not been undertaken by similar studies in South Africa.

6.4.2.2 Methodological contribution

In analysing the research phenomena, multiple methods were applied. Firstly, a systematic literature review approach was pursued in capturing existing literature data for Chapter 2. During this process, it became apparent that there is a paucity of related studies that have applied the systematic literature review methodology towards consolidating scholarly contributions into the discipline.

Therefore, this study makes a methodological contribution by having undertaken an ordered analysis of the existing literature.

The use of the case study research strategy was applied to gain rich insights on the role and impact of ICT usage. Empirically rich data acquired from the case study was analysed using the ANT framework. Further, semi structured interviews were conducted with ten SMMEs that participated in the study. The thematically analysed interview data from the participants was further organised using the SL framework. The use of the SL framework enabled the researcher to gain a better understanding of how the SMMEs interact with ICTs, establish the reasons for the interactions and understand the economic and social impacts of the interactions on the SMMEs. The author also applied observations and documentation review from the study respondents to inform the findings (Chapter 4).

6.4.2.3 Practical contribution

According to Corley and Gioia (2011), practical contribution arises when the research insights can be applied to real life problems faced by practicing managers, organisations or societies. The contribution could further create a link between theory, research and practice and have the potential to influence current and future organisational practice (Corley and Gioia, 2011).

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Relevance to practice is noted in various studies as a critical theme about theoretical contribution especially when it comes to empirical research (Gulati, 2007).

Corley and Gioia (2011), suggest that for a research to be seen to have a practical contribution, the following should be in place:

- The theory should be directed at solving a problem which exists in practice rather than advancing theory for theory's sake.
- The problems which theory aims to address should draw from the wider world of practice and the experiences of real people rather than from abstract derivations of hypothetical formulations.

The analysis conducted in this study on the role and impact of ICT usage will resonate with SMMEs. This study explores real life problems experienced by SMMEs in a developing country context. The conceptual framework was informed by feedback from SMMEs combined with existing theory. The conceptual framework shifts the focus from analysing the technical aspects of ICTs towards understanding the social impact on SMMEs. The constructs of the conceptual framework address some of the challenges that were raised by the participants also indicating their interactions with ICTs. The author acknowledges that the constructs of the conceptual framework are not exhaustive nor are they intended to address all the challenges relating to the research phenomena. The application of the conceptual framework by SMMEs may result in improvements of their economic, social and human well-being there by reducing poverty.

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6.5 Recommendations for future research

The limitations of this study and recommendations for future research are listed below:

- Majority of the study participants resided in the Gauteng province. It is recommended that a more in-depth study be conducted with SMMEs from other provinces.
- The study participants were primarily located in urban settings. It is recommended that future research be conducted with participants from rural setting or conduct a study that will include both urban and rural participants. This will aim to determine if there is a difference between how the rural versus urban users interact with ICTs and the impact thereof on poverty reduction.
- The sample population for this study only included the owners of the small, medium and micro enterprises. It is recommended that additional stakeholders who form part of the SMME eco-system be included in future research e.g. employees, customers, communities, supplier and government representative.
- Future research needs to be done in different socio economic environments, in order to determine the significance of some ICT enablers towards "enhancing poverty reduction" over others. Such longitudinal studies can entail additional levels of ICT complexity, within different organisational types and sizes. These studies can also probe the significance of cultural differences precipitated by race, age, ethnicity, and gender on the future role of technology towards enhancing poverty reduction
- A future extension of this study may be conducted to explore the role and impact of ICT regulatory frameworks on ICT usage by SMMEs.

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6.6 Summary of chapter and conclusion of study

This Chapter provides a summary of the research journey by revisiting the secondary and main research questions. The author demonstrated how the research questions were addressed in the various chapters covered in the study. The findings of the study revealed the following beneficial outcomes on ICT usage by SMMEs:

- ICT usage enables improved communication for SMMEs with their friends, families, employees, suppliers and customers. The use of modern ICTs as a primary form of communication leads to reduction in travel time and costs.
- Time saving resulting from the use of ICTs gives the SMMEs an opportunity to reallocate saved time to other activities thus improving efficiencies.
- The use of ICTs has improved information search by SMMEs thus creating the potential for better financial returns.
- Evidence suggests the use of ICTs to enhance human capital by enabling the SMMEs to acquire new skills and capabilities.
- Majority of the SMMEs use mobile phones to conduct their banking on the Internet. This creates convenience for the SMMEs and saves them time and costs.
- Modern ICTs such as social media platforms enable the SMMEs to advertise their businesses and gain access to wider markets.

An evaluation of the research contribution from a theoretical, methodological and practical perspective was further outlined in this Chapter. The contributions made by this study to the body of knowledge were as follows:

- The Systematic Literature review methodology was rigorously applied to explore previous theoretical and empirical studies that examined a similar research phenomenon.
- A combination of Thematic analysis, ANT and SL framework as the basis for analysing empirical data was applied in the study. This combination has not been undertaken by similar studies exploring the research phenomena.
- The application of Thematic Analysis method, ANT and SL framework during data analysis enabled the researcher to achieve the following:
    - Summarise the empirical data and create themes and patterns;

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  - Gain a better understanding of the interrelationships between all the actors involved;
  - Determine the use and impact of ICTs by using the SL framework components as a template for analysing the empirical data.
- The SL framework which had previously been successfully operationalised on a different sample type was enhanced using triangulated research findings. Various models and frameworks from previous studies were also used as input for constructing the conceptual framework.
- The conceptual framework was further validated by the study participants to test its practical relevance.

This Chapter acknowledges the limitations of this study and suggests areas of future research. The findings of this study concur with previous research indicating that the relationship between ICT usage and poverty reduction is not a straight forward process. Certain preconditions and interactions between various actors need to be in place in order to realise a positive impact from ICT usage by SMMEs on poverty reduction.

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Appendix A: Consent Letter

I am a PhD (Information Technology) student at the University of Pretoria. The focus of this study is to explore the role and impact of Information and Communication Technology (ICT) usage by Small, Medium and Micro Enterprises (SMMEs) on poverty reduction. SMME's play a significant role in socio-economic development. Their contribution is noted particularly in areas of job creation, income generation, skills development and poverty reduction. Limited research has been conducted on the use of ICTs by SMMEs in South Africa; thus limited evidence is available on the types of ICTs used, the reasons for using the technologies and the role of those technologies on the improvement of livelihoods and poverty reduction. Considering the critical role of SMMEs, it is important to explore means that will improve their sustainability and growth.

Your participation and perspectives are essential to the success of this project. Please make yourself available for an interview which is estimated to take 60 minutes. Kindly note that your participation in the research study is voluntary and you can withdraw at any time without any negative consequences. The data collected in this study will be treated with outmost confidence and used for the sole purposes of fulfilling the PhD requirements.

Should you have any concerns, kindly contact me or my supervisor on the details provided below:

Researcher: Busisiwe Mbuyisa Email: Busisiwe.mbuyisa12@gmail.com Mobile: +27 83 345 7016	**Research Supervisor**: Dr Awie Leonard Email: Awie.leonard@up.ac.za Tel: (012) 420 3375

Yours Sincerely,
Miss Busisiwe Mbuyisa

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Appendix B: Ethics Approval

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Reference number: EBIT/133/2015 29 March 2016

Ms BB Mbuyisa
Department of Informatics
University of Pretoria
0002

Dear Ms Mbuyisa,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Ethics Committee refers.

1 I hereby wish to inform you that the research project titled "The impact of ICT use by microenterpeises on livelihoods and poverty alleviation" has been approved by the Committee.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Codes of Research Ethics of the University of Pretoria, if action is taken beyond the approved proposal.

2 According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of any member of the Faculty Committee who will deal with the matter.

3 The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

Appendix C: Semi-structured Interview Guide

TOPIC & QUESTIONS	Time
INTRODUCTION I will introduce myself and provide high level background on the research study. The objective of this discussion is to ensure that the participants have enough contexts on what the study entails and expected outcomes of the interview. This is a semi-structured interview, which encourages participants to speak freely without being steered to a particular direction	5 min
Enquiry 1: Background on the Business This objective of this section is to gather background on the business from the SMME owners. The following questions will be covered: 1. When was the business established 2. What is the nature of the business? **3.** How many people does the business employ?	10min
Enquiry 2: The extent to which the SMMEs have access to ICTs This section will be directed to the SMME owners and employees; the following questions will be covered: 1. Which ICT(s) do you have access to in your business? 2. For what purposes do you use the ICTs? 3. Do all the employees in the business use ICTs? 4. How are the employees'/business owner trained to utilize the ICTs?	5min
Enquiry 3: The role of ICT use by SMMEs on Poverty Reduction This section will be directed to the SMME owners and employees to understand the role of ICTs on their livelihoods. The following questions will be covered: 1. What are the benefits of ICT adoption to your business? 2. Explain how the use of ICTs has contributed to your well-being	15min
Enquiry 4: Recommendations on improving the current business landscape for SMMEs and ICT usage in South Africa This section will be directed to the SMME owners; the following questions will be covered: 1. What are your views on the current small business environment in South Africa? 2. What are the key challenges impacting your businesses relating to ICT usage? **3.** What improvements would you recommend towards addressing the challenges on ICT usage mentioned above?	15min
CONCLUSION	5 min

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