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ICT Innovation and Economic Development: Lessons from a Tech Start-up in Soweto

Collen Masango

0007370v

Research Report presented for a Masters Degree in Development Planning in the Faculty of Engineering, School of Architecture and Planning, University of the Witwatersrand.

21 December 2017

DECLARATION

By submitting this dissertation, I declare that the entirety of the work contained therein is my own original work, that I am the author thereof (unless to the extent explicitly otherwise stated). It is submitted in partial fulfilment of the requirements for the degree of Masters of Development Studies at the University of the Witwatersrand. I further declare that I have obtained the necessary authorisation and consent to carry out this research and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Collen Masango

0007370v

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ABSTRACT

Twenty three years into democratic South Africa, the country's largest and most famous township, Soweto, is still the unfortunate epitome of economic marginalisation and poverty; a reflection of the unrelenting effects of apartheid spatial planning and the exclusion of black people from mainstream economy.

Contemporary development discourse centres on sustainability, innovation and smart city concepts, as some of the key influencers. Specifically ICTs are viewed as enablers of economic development, capable of disrupting entrenched systems and economies. This research explores the opportunities presented by ICT innovation for economic development amongst small businesses operating in Soweto, Johannesburg. The research hones in on ICT4D, a concept of development centred on ICTs to uncover development planning interventions and principles, applicable to the South African context. Using the experiences of a Soweto based Start-up Company, iTea; the research explores the diffusion of their Township Economy App, its rate of adoption by these businesses and its economic impact.

Key lessons for local authorities such as Johannesburg is the need to harness local content and innovations, derived from tech start-ups and innovators who live in those communities in order to achieve local economic development.

Keywords: ICT, Innovation, Economic Development, ICT4D

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Muntu wami, Siphosihle Simelane: Uyisipho esihle, thank you for taking over the cooking responsibilities while I was busy with my research. I owe you

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Ngiyabonga Somandla

"My name is Matimisi Lethuk'thula Masango and I make no apology for linking my thinking with computer technology… a modern day hymn for the new church"

(adopted from Reverence, Faithless (1997)

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Chapter 1: Introduction

1.1 Introduction

Concern is growing that the space economies of South Africa's cities are becoming more unequal, exacerbating historical racial and income divisions and/or generating new forms of spatial inequality (Sinclair and Turok 2012, cited in Gotz and Todes 2015:117). These are manifest in the economic marginalisation of former townships, the dispersal of economic activities from central cities to suburban locations. Mahajan (2014) attributes this regression to the tenacious legacy of apartheid, inadvertently reinforced by post-apartheid urban development policies. Poverty, unemployment and inequality are identified by government as the three most pressing challenges facing the South African economy (COJ 2015, RSA Gvt. 2012). Townships in major urban centres are where much of this poverty, unemployment and inequality is most evident, in stark contrast to the economic enclaves of the suburbs and burgeoning economic nodes within the same city.

This dispersal of the economic activity in Johannesburg, away from areas of need such as the inner city and townships is evident in the consolidated growth of Sandton in recent years as well as new city developments in the northern portions of the city such as Steyn City, Waterval Estate and other dotted developments across the city. South Africa's inequality has remained constant over its twenty three year democracy with Johannesburg labelled as one of the most unequal cities in the world (COJ 2016c). Johannesburg is home to one of the largest townships of South Africa and quite arguably the most iconic township of the country, Soweto. Whilst Soweto has been the site of much construction and development since democratic rule in 1994, the legacy of apartheid spatial planning remains stubbornly entrenched.

On a global scale, innovation is increasingly regarded as fundamental to development (Spencer and Smith 2010). Technological innovation is considered by Hanna and Knight (2012) as an enabler of economic development, with countries learning to harness Information and Communications Technologies (ICTs) to transform their education systems, deepen their learning capabilities, and improve interactions among participants in their national innovation systems. The 2016 World Economic Forum in Davos, focused on innovation and the implications that technological advances have in shaping a future world and the global economic order. The concept or advent of the Fourth Industrial Revolution was one of the topical issues at the congregation of world leaders. Building on the third industrial revolution, the use of electronics and information technology to automate production, the fourth industrial revolution is said to be defined by the velocity, scope and systems impact. It will result in the disruption of almost every industry in every country, signifying transformation of entire systems of production, management and governance (Schwab, 2016). The fourth industrial revolution thus provides even greater impetus to emerging economies to use Information Communications Technologies (ICTs) to build confidence, thrive and achieve economic development.

Africa is part and parcel of the wave of information and communications technology innovations taking root across the globe and shaping economies along a new trajectory of innovation. Kenya and the eastern community of Africa are some of the leading nations on the African continent with Kenya being home to several mobile phone applications developed and in operation, servicing a range of sectors and industries such as agriculture. These innovations include M-Farm, i-Cow, KilimoSalama and M-Pesa, all designed to respond to challenges faced by low income residents in Kenya. Many of these innovations have emerged from the private sector and start-ups who have latched onto ICT as the backbone to the solutions of their everyday circumstances. Some of these products have created market efficiencies amongst farmers, leading to economic development and growth of the agriculture sector.

South Africa is similarly hedging forth as a leader in ICT innovation, with Cape Town and Johannesburg in competition with each other as to which city is more competitive in relation to ICT and innovation. The City of Johannesburg has evolved a number of smart city interventions over the past number years, including the partnership with the University of the Witwatersrand, through the Johannesburg Centre for Software Engineering (JCSE) which has seen joint activities and programmes centred on technological innovation. These include the construction of the Tshimologong Precinct in Braamfontein, which is a hub of tech innovations and space for students and entrepreneurs in the ICT space to find working spaces, collaborate and learn, similar to Silicon Valley in San Francisco. Other interventions over the years include the introduction of a hackathon (#Hack.Jozi), gaming festivals (A-Maze) and the Fak'ugezi festival. All of this falls on the back of the city's adoption of Smart City objectives as contained in the COJ Broadband Policy Framework 2009.

1.2 Problem Statement

Despite the emphasis placed on innovation and the opportunities presented by globalisation and technologies such as ICTs, many countries and cities face difficulties in effectively harnessing opportunities associated with technological innovations (Hanna and Knight 2012, OECD 2007). Whilst the City of Johannesburg has shown positive intent in its promotion of the use of ICTs, as encapsulated in the COJ Broadband Policy Framework, there are a number of opportunities that have not been effectively harnessed:

The first relates to a missed opportunity to place greater emphasis on ICT innovations as economic development tools, as contained in the broadband policy framework. For instance, in calling for innovative and technological solutions to the multitude of challenges facing the city's residents through the #Hack.Jozi Challenge of 2015, the city failed to capitalise on a number of solutions presented to it. Secondly, also highlighted in the policy framework, the COJ has not focused enough on closing the digital gap in areas of greatest need by leveraging off SMME activity and local content providers. Lastly, whilst the broadband policy framework prescribes the involvement of all stakeholders in the creation of Johannesburg as a digital city, the COJ is overly inward looking for solutions to the city's development challenges.

1.3 Rationale for the Study

In 2015, the City of Johannesburg held its inaugural competition and invited innovators within the ICT space to submit ideas and solutions to everyday challenges facing the residents of the city (COJ 2015). “The #Hack.Jozi Challenge is an initiative aimed at finding Johannesburg’s own Mark Zuckerberg-technology boffins with great digital solutions to some of the city’s everyday challenges. The initiative attracted dozens of tech-savvy entrepreneurs with great digital ideas but who lack the necessary funding to fully develop their concepts” (COJ, 2015). The competition produced a number of entrants with the top ten finalists presenting some of the following solutions: *Diepsloot Kasi Hive* developed a Mobile Phone Application (App) that would allow users to register the attendance at a local clinic, without having to queue for prolonged hours; How2Get2 developed an App that assists commuters to get from one point to the next using all different modes of public transport available per area; and Atinov developed a fire detection device that could be installed in an informal settlement, linked to emergency services for a quick response time in the event of a fire. These are all innovative ideas that are capable of bringing about real changes in the lives of communities that they could be deployed in.

Another of the entrants to emerge as a top ten finalist of the competition is a start-up with a solutions to the perceived slow growth and high failure rate of township businesses, iTea. The Start-up company (iTea) developed the Township Economy App (TEA), and believe the innovation has the potential to create economies of scale amongst township businesses, expand businesses' access to local markets and open up opportunities for entrepreneurs to emerge and thrive.

iTea has developed and deployed a website to local businesses within Soweto, as a pilot phase. The team is in the advanced stages of their second phase, which entails an introduction of the App to the broader public. TEA is a technological innovation aimed at increasing business performance amongst Soweto businesses through the adoption and use of ICTs. Steinfield et al. (2012), make the point that extensive research on ICT use in

business suggest that greater adoption and use should be associated with improved company performance. Jenny and Mbiti (2010) suggest that there is a gap in knowledge of the economic impact of new interventions and ICT innovations. One of the aims of this research report is thus to seek an understanding of the impact of the introduction of TEA to Soweto based businesses and to contribute to the body of literature on the relationship between ICT innovation and economic development.

1.4 Research Objectives

Primarily, the research aims to understand the opportunities presented by ICT innovation for economic development amongst a portion of small businesses based in Soweto. Using the experiences of a credible start-up company, the research explores how the diffusion and adoption of technology can contribute towards economic growth or development of a particular community. Secondly, using the experiences of the start-up company combined with lessons from relevant discourse on the successful use of ICTs to achieve particular economic objectives, the research aims to develop policy recommendations for Johannesburg and South Africa. The research also seeks to explore the roles governments ought to play in creating an enabling environment for ICTs to thrive and contribute to economic development. Drawing on the experiences of a start-up, introducing new technology within a township scenario, there are clearly important lessons to be drawn for the use of technology for economic development and development planners.

1.5 Research Question

The research seeks to explore the relationship between ICT innovation and economic development. More specifically; how ICTs be harnessed for economic development purposes by small businesses, in South Africa?

Sub Questions

- How do local businesses, in townships like Soweto, make use of technology in their businesses?

- What instruments and indicators can we use to measure the impact of ICTs on local economies?
- What is the impact on ICT usage through the introduction of iTea in Soweto, Johannesburg?
- What policy lessons can we draw on, to enhance South Africa's use of ICTs for economic development and development planning?

1.6 Research Scope

The research literature draws on a body of knowledge from across the globe, citing experiences and theoretical positions from both the North and global South on ICTs impact on economies. The research focuses on the deployment of an ICT innovation within the area of Soweto, Johannesburg. This provides local insight in terms of the successes, experiences and obstacles in the diffusion of ICT innovations. The interviews conducted on Soweto businesses gives an indication of some of the trends in relation to ICT usage for economic development purposes. This would allow governments, researchers and start-ups to understand the challenges and opportunities as presented by local communities in relation to the use of ICTs for economic development.

1.7 Limitations

iTea has registered over 150 business onto its website and the intention of the survey was to reach all these businesses. The final number of businesses interviewed however is 80, due to certain limitations. Some of these limitations include difficulty in reaching business owners and individuals with authority to speak on the experiences and practices of businesses. Many individuals conduct other activities in addition to the businesses they run, reducing their availability for interviews. Geographically the businesses are spread throughout Soweto, increasing the area to be covered and limiting the amount of time available to coordinate interviews and so time was a major limiting factor.

The results of the research are not fully representative of the business community in Soweto as the sample size is low. However, in relation to the number of businesses registered onto the TEA App this does provide a good indication on the behaviours of businesses on this platform. Further limitations are highlighted in the third chapter of the research.

1.8 Research Layout

The research report is structured in the following manner:

Chapter 2: Literature Review

The chapter introduces the topics of ICTs and economic development, as the two theoretical anchors of the research report. Grounded on the relevant economic schools of thought, the chapter highlights themes relevant to ICTs and economic development, inclusive of entrepreneurship, innovation and technological tools such as the mobile phone. The chapter concludes with a section on ICT for development, an emergent theme in development discourse on which to base a theory for Johannesburg's development agenda.

Chapter 3: Research Method

This chapter focuses on the research methods deployed in the research report, highlighting the quantitative approach and observations applied.

Chapter 4: iTea and the Start-up Experience in Soweto

This chapter details findings of the survey conducted on the businesses registered onto the TEA. The chapter assesses these findings, focused on the diffusion and use of technology, the relationships between businesses and their consumers; Levels of businesses' knowledge of the City of Johannesburg’s development programmes and the adoption and impact of TEA on businesses.

This chapter provide information on the role of start-ups and the environments they operate in. The experiences of iTea as an innovator in Soweto will be explored through the series of interactions and discussions held with the project owners

Chapter 5: ICTs for Development: Planning Responses for Joburg

This chapter considers the fundamentals for economic development through ICTs in relation to planning. The chapter builds from the main arguments and conclusions drawn from the second chapter framing them under the broad themes of Human Capital and ICT Innovations within a South African context. The chapter demonstrates how ICTs and innovation should be harnessed to achieve economic development in Soweto

Chapter 6: Conclusion

The chapter is a synthesis of the main outcomes from each of the chapters as well as a set of recommendations on the use of ICT for advancing economic development

Chapter 2: Technology, People, Development

2.1 Introduction

Tracing economic theories from the era of Adam Smith, in the late 1700s, Chang (2014) points out that there is no universal economic theory or school of thought explaining the economy or concept of doing economics. There are a range of theories and schools of thought that define economics and the development process, inclusive of Classical, Neoclassical, Developmental, Marxist, Schumpeterian, Neoliberalism, Keynesian amongst others. Depending on the situation and time context, different economic theories carry different weightings and relevance. According to McCann (2015), our analytical frameworks are dependent on our intellectual and social environments, where these change, so too does our apprehensions of the world. Development can be approached from a range of viewpoints or through the application of specific economic principles, largely dependent on the development challenges at hand or the development hegemony of states, cities, local authorities or development institutions.

"In planning a sustainable future for cities, policy makers and planners are currently largely supported by the radical technological changes and the new potential these offer for economic development, organisational performance, social equity and quality of living in urban environments" (Stratigea 2014:44). Innovation, sustainability, localisation and smart cities, are thus some of the major buzzwords in today's development discourse. These concepts have evolved from the development experiences of nations and cities and find expression in the work of practitioners, scholars, theorists and urban planners. Cheng (2014) points out Classical, Marxism, Developmental and Schumpeterian (CMDS) schools as being relevant for an understanding of how technologies develop and productivities rise. He also identifies the four schools of thought as particularly relevant for the agenda of developing economies, pointing out key concepts from each of these. These features tie in with the research objective, developing a greater understanding of the relationship between ICTs and economic development.

Johannesburg like any other urban area in South Africa, faces economic challenges that continue to hold it back from its full development potential, twenty three years into democracy. It is important to seek relevant solutions to the problems that beset the country and local authorities like Johannesburg, using the most relevant policy instruments at our disposal. Planners need to define these policy instruments, taking advantage of the fourth industrial revolution, as articulated by Schwab (2016), to build confidence, thrive and achieve economic development.

This chapter explores the relevance of the CMDS economic theories, in defining the policy response to Johannesburg's development challenges and opportunities. The chapter commences with a brief description of the four schools of thought; Classical, Marxism, Developmental and Schumpeterian. Key concepts and themes as emerged from the schools of thought will be detailed further, drawing out relevant lessons for application within the development objectives of South Africa and Johannesburg.

2.2 The CMDS Development Paradigms

Rather than elaborate on the CMDS theories, the intent is to tease out key concepts and themes related to technology, productivities and economic development from the four. Whilst there may be critiques of the theories, the intent is to extract the core elements that each of the theories are founded on.

Classical

"In their attempts to make profits, producers strive to supply cheaper and better things, ultimately producing their products at the minimum possible costs, thus maximizing national output"(Cheng, 2014:128). He further states that Classical theory is relevant in today's situation for its notion of the **economy as being made up of classes, rather than individuals**. This gives us insight into **individuals' behaviours**, which are shaped by her place in the system of production (Cheng, 2014).

Marxism

"Taking the Classical school's production-based view of the economy further, the Marxist school argued that 'production is… the basis of social order'. Every society is seen as being built on an economic **base**, or the **mode of production**. This base is made up of the **forces of production** (technologies, machines, human skills) and the **relations of production** (property rights, employment relationship, division of labour). Upon this base is the **superstructure**, which comprises **culture**, **politics and other aspects of human life**, which in turn affect the way the economy is run. In this sense, Marx was probably the first economist to systematically explore **the role of institutions** in the economy..." (Cheng, 2014:129).

Marxism's analysis of the economy is central to the understanding of local and global dynamics, given the speed of technological changes affecting the forces of production, which then impacts and shapes the entire economic base. Space and property, as relations of production for instance, are greatly influenced by technological advances and how space is in turn used. The fundamental element to Marxism however is in the superstructure, comprising of racial segregation and discrimination. Lamola (2013) makes the point that Marxism as a social hermeneutics refers to how humans as social beings understand, explain, model and transform their world and how they are conscious of how they are transformed and shaped by their world. He also draws conclusions of Marxism as a science of praxis, a reflection of prevalent social conditions and reality as opposed to a utopian viewpoint on what ought to be.

Turok (2015) is particularly critical of South Africa's intellectuals for shying away from discussion on ideology and instead focusing on institutions. He illustrates the press and media as an example where discussions are focused on the institutions but not on the ideologies and inherent biases adopted by the media. "Marx said that you have to look at the economic base and then you must look at the superstructure and how the two link up. He said this is the most important aspect of any social system" (Turok, 2015:37). This is an important lens from which to view the interplay of technology and the practical ways in

which it shapes and influences the social system or economic environment, within the Johannesburg and Soweto context.

Developmental Tradition

"The Developmentalist tradition on the other hand is focused on **helping economically backward** countries develop their economies and **catch up** with the more advanced ones. For economists belonging to the tradition, economic development is not simply a matter of increasing income, which could happen due to a resource bonanza, such as striking oil or diamonds. It is a matter of acquiring more sophisticated **productive capabilities**, that is, the **abilities to produce by using (and developing new) technologies** and organizations" (Cheng, 2014:134). The role of the state in development has been a major topic of theoretical debate, according to Weiss (2010) Reinert (1999) amongst many theorists. Tracing the two hundred year history of market society, Weiss (2010) observes the state's role in economic affairs of helping to establish markets and enabling them to work. This she grounds on shared viewpoint across a number of scholars that there is no such thing as a generic state and that governments instead vary dramatically in their internal structures and relations to society.

Schumpeterian

"Schumpeter is credited with an expansion of Marx's emphasis on the role of technological development as the driving force of capitalism. He argued that 'capitalism develops through **innovations by entrepreneurs**, namely, the creation of new production technologies, new products and new markets. Innovations give the successful entrepreneurs temporary monopolies in their respective markets, allowing them to earn exceptional profit, which he called the **entrepreneurial profit.** Over time, their competitors imitate the innovations, forcing everyone's profit down to the 'normal' level' **(Cheng, 2014:143)**. Similarly, Aghion et al. (2015) identify three main ideas upon which Schumpeterian growth theory is based: growth generated by ideas; innovations result from entrepreneurial investments and; new innovations replace old technologies or creative destruction. The replacement of old technologies by new ones takes places through a progressive or incremental process and

not necessarily as an abrupt change (Cheng, 2014). The Schumpeterian focus on innovation is significant in the contribution to economic growth it presents to Johannesburg and the country as a whole.

Emergent Concepts from CMDS

Given that the main thrusts of the research are on the use of technologies (ICTs) for economic development, within the developing economy context of South Africa, the CMDS theories are highly relevant to the research report. An underlying theme across the four theories is the production process as it impacts on the economy and all of society. Classical economics sees producers seeking to maximise production through cheaper input costs. Developmentalists believe backward economies can catch up through acquiring productive technologies or new organisations, thereby achieving economic development. Schumpeterian theory takes its cue from Marxism, which sees every society as being built on an economic base, consisting of factors of production (inclusive of technology and human resources) and relations of production (employment relationships and the division of labour). Schumpeter focuses on innovation as a critical factor in the production process, constantly shaped by technological advances. These innovations are driven by entrepreneurs who focus on technology as the backbone of their product development.

Other concepts emerging from the CMDS schools include the notion of a 'superstructure' as developed by Marxism that underlies every society and economy; encompassing elements such as culture and politics. Similarly, Classical economics delves into the behaviours of individuals within the production system and also points to the class-nature of the economic system. Collectively, these concepts can be grouped into two broad areas of human development (behaviours) and Innovation (both the physical production of technological tools and act of innovation as embodied by entrepreneurs), upon which to base an enquiry into the relevance of ICTs for economic development. This research will argue that these two overarching themes, human development and innovation are key factors in the success

of development strategies within the interconnected world we live in under the development umbrella of ICT4D.

2.3 Human Development

An important departure point is a distinction of two terms, economic growth and economic development, which are often used interchangeably yet carry different meanings. Schumpeter (1934) is recognised for his work in drawing a clear distinction between the two, in addition to other achievements in his career (Hunt, 1989). Schumpeter (1934) argued that economic growth refers to a gradual process of expansion, producing more of the same, using the same methods in order to do so, whilst economic development is defined as a more dramatic and **disruptive process**, consisting of new combinations of productive means (Hunt, 1989). Over time, a growing number of economists have backed Schumpeter's distinction of the two concepts. For instance, Rosenberg (2000) argues that economic development is not an equilibrium-seeking process but rather an evolutionary process where change is the norm (Rosenberg, cited in Niosi, 2008). According to Wayne (2012) economic growth may be necessary but not sufficient for economic development, adding that economic development consists of **changes in output distribution** and **economic structures**. Part of these changes may include improvements in the material well-being of the poorer half of the population, an important objective to pursue for a developing country's development objective (Wayne 2012). Niosi (2008) takes the views of Saviotti and Pyka (2004) and further states that economic development is a process of creating new sectors, adding variety to the economy and producing qualitative change.

The research report thus takes a bias towards economic development in light of the developing nation status of South Africa. With Johannesburg regarded as one of the most unequal cities in the world, the focus on economic development must be central in the COJ's policy intent as well as subsequent programmes and development choices in order to realise material improvements for the majority of its citizens. The disruptive process inherent within economic development (Hunt, 1989) must be prioritised over economic growth for its potential contribution to human development. Abramowitz (1989) cited in

Lundvall (1996) observed that the factor of production growing most rapidly in the 20th century has been human capital, with technical progress favouring the productivity of skilled rather than unskilled labour. At the heart of economic development is clearly human capital and the abilities/capabilities people have developed over the time. The following section looks closely into some of the human development capabilities in relation to innovation and technology.

2.3.1 Innovation and Entrepreneurship

An important relationship exists between entrepreneurs and the desire for the new and more effective means of creating value. Innovations are derived from the actions of entrepreneurs who introduce better ways of doing that result in new creations of economic or societal importance (Schumpeter 1934 and Edquist 2014). Accordingly, entrepreneurship is the personification of innovation, as articulated by Hanna (2012). Without the role of the entrepreneur, forever pushing the envelope of possibility, then innovation is bound to slow down. What is more important here is the innovation process as embodied by entrepreneurs who innovate in how they see opportunities instead of seeing innovation as a purely physical act of product innovation. Voeten, de Haan and de Groot (2011) who model their work on Schumpeter (1934) see the innovation process as the introduction of **new or improved** products, production techniques, and organisation structures as well as the discovery of new markets, and the use of new input factors. Gebreeyesus (2012) advances a similar argument in that the innovative process is not always about completely new products, but also refers to the transfer of **systems of knowledge** from one area to the next. Beyond the introduction of new or improved products, Voeten et al (2011) also describe the innovation offering as one wherein "a firm provides comparable value to buyers but performs its activities more efficiently through lower costs or when a firm performs its activities in a unique way, thus creating greater buyer value and attracting premium price" (*ibid*. 102). For a more rounded view, the Oslo Manual (1992) defines innovation as the implementation of a **new or significantly improved** product or service, process, marketing method, a new organisational method in business practices, workplace organisation or external relations (OECD 2014). The Oslo Manual reflects on the non-physical aspect of the

concept of innovation. It identifies with an entrepreneur of a company innovating by merely changing whom they relate with externally. This could impact significantly on the entrepreneur's business, allowing them to discover new markets or learn different and more productive processes related to their business.

2.3.2 The Learning Economy

'Do not reinvent the wheel'! This is a common catchphrases of any workplace or learning environment. It is also a universal fact that within the connected world we live in, information and knowledge is available at a *'click of a button'*. Again, this cliché statement resonates universally on the function served by the internet as a source of information. Reflecting on the work of a number of economists and social scientists, Avgerou (1998), makes the observation that information has acquired a more prominent role than ever before in economies. This is inclusive in areas such as business, policymaking and public life in general, wherein the production of information is recognised as an industrial activity. This era of heightened information gathering and packaging into knowledge is referred to as the Knowledge Economy.

An important distinction is made between information and knowledge, however. “At its simplest information is often defined as raw ‘facts’ or ‘data’, and can be differentiated from ‘knowledge’, which is information that has been incorporated into human understanding and action” (Klein and Unwin, 2009:1053). This is turning data and information into usable format called knowledge. Information that has been packaged is referred to as codified knowledge and can be used indefinitely by a multitude of users without diminishing its value (Archibugi and Simonetti 1998). Codifiable knowledge is a 'public good' because it is 'non-excludable' and is ‘non-rivalrous’, that is, the holder cannot prevent others from using it (ibid).

Lundvall (1996) presents similar views on the importance of knowledge and explains the learning economy as either being the theoretical perspective that explains the process of change in technology, skills, preferences and institutions; or it may refer to trends that recognise the important role of knowledge and learning at all levels of the economy (Lundvall, 1996). Avgerou (1998) argues that the value of knowledge and the generation of knowledge from information is one of the most important resources for the transformation of the economy. The pursuit of economic development can be realised through the channelling of knowledge so that it is used to transform certain aspects of an economy. Practically this could involve the market or entrepreneur influencing a specific economic sector in a particular direction through the distribution of gained knowledge. Such an exposure to new markets could spark growth of businesses in the sector or attract interest of new entrants into the sector.

On technology and the learning economy, Metcalfe (1995) cited in Archibugi and Simonetti (1998) argues that the term technology is used to refer to both a tangible artefact and to the knowledge necessary to produce it. Without learning, technology cannot be reproduced or advanced. Similarly, Hanna (2012) argues that changes in technology open new opportunities for development opportunities, and such development requires learning to benefit from opportunities arising from technological breakthroughs. Advances in technology and learning are complimentary. “A new technological revolution creates major discontinuities and shifts in the direction of change, opening new paths to development and opportunities for learning and catching up” (Hanna, 2012: 15). This is important for developmental discourse as it presents opportunities for emerging economies to simply follow development trends and mimic these in their economies, through acquired knowledge.

From the viewpoints of the above authors (Voten et al. 2011, Edquist 2014) and various institutions (OECD, 2004), it is clear that there is a significant amount of learning and diffusion that accompanies the innovation process. They make extensive reference to ‘improvement’ on existing technologies and ‘ways of doing’ as an integral part of the

innovation process. The knowledge economy also involves social interaction and the sharing of ideas. The innovation process clearly depends on what Voeten et al. (2011) refer to as the aggregation of small insights through learning by doing. The learning process is thus not a transfer of material from one place/individual to the next but a more complex exercise that requires doing in order for knowledge to be transferred.

The learning and diffusion of innovation more than often occurs gradually through what is commonly referred to as incremental innovation. Incremental innovation is primarily driven through a learning process that includes the discovery, experimentation, development, imitation and adoption of something new (Dosi cited in Voeten et al. 2011). These steps demonstrate the unstructured process of a creative idea or invention brought to life through diffusion, research/testing phase, as articulated by Tether (2003), cited in Voeten et al (2011). Through the testing steps or the experimentation undertaken on new products, processes or methods, these can be replicated in new markets such as developing countries (Gebreeyesus 2012). Nation states do not necessarily have to be originators of knowledge but can take advantage of its non-rivalrous nature to use in their development. The learning economy is an era of heightened generation of knowledge and dissemination of the knowledge as a common good across borders and cultures. In particular, learning economies are encouraged to take advantage of the opportunity to catch-up through technological breakthroughs. Accordingly, Avgerou (1998) reflects that the success of individuals, firms, regions and national economies reflect capabilities to learn, which in turn is affected by the increasing use of information technology.

2.3.3 Measures of Innovation

The above sections provide preliminary insights on the innovation process. The various authors illustrate the clear linkages between innovation and entrepreneurship (Hanna 2012, Gebreeyesus 2012), learning and diffusion of incremental innovation (Lundvall 1996, Avgerou 1998, Voeten et al. 2011, Gebreeyesus 2012, OECD 2014). It is equally important to be able to measure the diffusion of innovation, given the desired replication of innovations from developed to developing regions in an attempt to catch up (Hanna 2012, Chang 2014). However, innovation can only be measured when a unit of measurement is established.

Again, with reference to Chang (2014) who argues that there is no universal truth to doing economics, a similar stance can be taken on the measurement of innovation. Archibugi and Simonetti (1998) argue that innovations cannot be reduced to a common yardstick, simply because of the wide differences between their economic and social significance. There are a multitude of viewpoints and measures of innovation, which is proof of the diversity of innovation. To illustrate, some of the proposed measures of innovation include the following:

Kotane and Swan (1995) cited in Voeten et al. (2011) argue that innovation can be investigated in terms of both newness to the firm and newness to the market or world. They introduce measures of 'newness' of innovation in line with three criterion of:

- The level of newness;
- Value creation and;
- Innovation Process

For measurement purposes, the OECD (2014:15) categorises innovations in the following manner:

- **Product innovation**: the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses.
- **Process innovation**: the implementation of a new or significantly improved production or delivery method.
- **Marketing innovation**: the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- **Organisational innovation**: the implementation of a new organisational methods in the firm's business practices, workplace organisation or external relations.

Edquist (1997) on the other hand proposes measures of the innovation process through an enquiry of the number of interactions and actors that are involved in the process. The roles of institutions are critical in this regard, "as the number of actors involved increases, the

innovation process becomes more complicated and more interactions occur" (Edquist, 1997). He proposes the following questions as a means of measurement:

(1) How are the interactions and the cumulative knowledge generation of the system's actors structured?

(2) How is the created value shared within the system?

Lastly, according to Archibugi and Simonetti (1998), an innovation can be monitored by subjecting it to these five questions:

(1) What kind of innovation?

(2) Made by whom?

(3) Used in which product?

(4) Used by whom?

(5) For which human benefit?

Each of these measures illustrated above, questions different aspects of an innovation and each will generate a particular set of outcomes for the product/process being tested. In order to generate a conclusive verdict on the effectiveness of an innovation, any of the works of the various authors could thus be put to use in evaluating the comprehensiveness nature of an innovation and its effectiveness in its intended function. Context is therefore important. Nelson (2008) affirms this point, stating that "The essence of trying something new, of innovation, is that what will happen is uncertain in this sense, with success never a sure thing; and where and when a considerable amount of innovation is going on, being done by different economic actors, the current context is particularly uncertain" (2008:11). He further states that in such a context, considerable progress may be made by the entire economy, "but through a process of 'creative destruction' that involves losers and winners" (ibid: 11). In the discourse of catching up, this is a vital consideration. The diffusion of knowledge is not always guaranteed to yield the desired results. So a product transposed from the generally thriving or developed nations of the north, may not immediately lead to

economic returns for the recipient nation of the south. These are important considerations for a theory of Johannesburg and conversation on innovation policies being developed or adopted from existing examples. The measures of innovation, or more specifically the choice of measurement is integral to the interventions sought by the drivers of the innovation. Avgerou (1998) adds to this discussion by introducing a delay in the uptake of an innovation, pointing to the sluggish nature of the learning process where organisations can take a long time to adjust to a technology. This, he adds, may lead to new materials or methods not being efficiently used, leading to a situation where innovation dynamism coexists with sluggish productivity growth (*ibid*).

This section on economic development outlined the various concepts of entrepreneurship, the learning economy and the value of information or knowledge in such environments and the innovation process. These are all human capital related elements. The next section takes a closer look at the physical components, the tools of technologies and innovation.

2.4 Information and Communications Technologies

ICTs are defined as the preeminent technological revolution of our time (Hanna, 2009). The term ICT revolution is often used to describe the profound changes that characterise the communications sphere. The ICT revolution is described as being more profound than any other in history in terms of its speed and pervasiveness (Hanna, 2009) as well as the velocity, scope and systems impact it carries (Schwab, 2016). Similarly Avgerou (1998) describes Information Technology as the most pervasive technical innovation of the post-World War II era. "The impact of the ongoing revolution extends beyond the developed countries to countries at all levels of development, extending from industry to services and from business to public agencies, communities, and civil society organisations" (Hanna, 2012:1). But why is technology so important in the context of development and how do we engage with technological advances as planners?

Whilst Heeks (2009) traces some key stages in the evolution of communications technologies to the 1950s, the rise of the World Wide Web in the 1990s is seen as the single most influential development in the field of communications. From the first free website and web browser developed in 1993, in Switzerland, the world has witnessed an explosion in the use of the internet (Klein and Unwin, 2009). Within a fourteen year time span the number of users is said to have risen 50 times, reaching over 1.3 billion users, with emails as the most popular tool (ibid). Accordingly, this uptake and spread of the World Wide Web and the Internet has become a prominent feature in communications, sparking an upsurge in ICTs (Heeks, 2009). The pervasiveness of the electronic communications technology has revolutionised the way people communicate amongst one another, resulting in changes in the way people organise work and social interactions. Anyone casting their thoughts back thirty years to the 1980s will recall the difficulty of communication but today a conversation with someone across the globe can happen in real-time, with minimal cost implications given where you are located in the world.

Rather than elaborate on the history of the ICT revolution, it is more relevant to reflect on some of the significant present day experiences in terms of how we share and consume news, entertainment and information. Google for instance has evolved over its twenty years of existence from a research project into the most powerful search engine in the globe. Similarly, Wikipedia has taken a very short time span to move from conceptual stage of a free online encyclopedia to the global giant it has evolved in just sixteen years of operation (Wikipedia 2017). Launched in 2001, Wikipedia is unique in its open source in that its creators built the website to be edited by volunteers around the world, without a central organisation controlling editing of its content. Facebook is a social networking service launched on February 4, 2004 amongst college students. By September 2006, Facebook was extended to everyone above the age of thirteen with an email address. Facebook has revolutionised the way we connect with people and has over two billion users the world over (Statista, 2017).

Social Media in general: Omidyar (2014) believes that social media is a tool of liberation and empowerment. He reflects of the Arab Spring of 2014, which was largely executed on the YouTube platform and argues that social media is the most important global leaps forward in recent human history. 'It provides for self-expression and promotes mutual understanding. It enables rapid formation of networks and demonstrates our common humanity across cultural differences. It connects people, their ideas and values, like never before' (Omidyar, 2014).

2.4.1 ICT and Globalisation

There are a multitude of viewpoints on the term globalisation, its definition and characteristics. There is a tendency to emphasise on globalisation as largely being about the global economy, an undeniable product of the global ecosystem, yet globalisation extends across a multifaceted set of influences, impacting of systems of politics, governance and culture. Accordingly, Avgerou (1998) leans towards an overarching and all-encompassing definition of globalisation as a combination of some of the following key features:

- The trend towards increasing free trade and flow of finance, labour, and commodities among countries;
- The increasingly more significant role attributed to multinational corporations ;
- The increasing partnership among companies around the world, irrespective of distance, which is enabled by new information, telecommunication, and transportation technologies;
- The cultural flows of signs, meanings and identities which result from global communications and international migration.

Audretsch and Sanders (2011) observe that globalisation cannot be considered in isolation from ICTs. "The spread and appropriation of ICTs have been a key dimension of globalization, pushing societies to build communications systems and manage them well, and to develop infrastructure and the capacity to use it" (Spencer and Smith, 2010: 11). It is important to frame advances in information and communications technology within the globalisation context, which has been shaped by, and in-turn fuelled by the rapid diffusion

of ICTs. They point to a symbiotic relationship where the development of ICTs, on the one hand, has fuelled and contributed to the development of globalisation, on the other hand. They also point to an opportune period in time wherein communications costs dropped significantly, which facilitated the expansion of companies across the globe, whilst the development of ICTs received impetus from the international demand for goods and services in general (Audretsch and Sanders 2011). Similarly, Avgerou (1998) points to the role of ICTs in shaping the global economy, making the world more interconnected and connecting communities in new space-time combinations.

2.4.2 ICT Diffusion

The Internet and ICTs are responsible for the copying and diffusion of creative content across national boundaries (OECD 2007). This replication has taken place as a result of the rapid advances in new technologies, most notably the ICTs. Again, a major outcome of globalisation is the rapid diffusion of innovation, a crucial determinant of competitiveness and national progress (OECD, 2007). The diffusion of information technology allows for the spread of innovations across markets of different nation states, leading to the 'death of distance' or the diffusion of innovation in an increasingly ‘flat world’ as articulated by Shapira et al. (2011).

This flat world and death of distance does not necessarily mean everyone enjoys the same level of opportunity however. On the one hand, the experience of entrepreneurs in the north have enjoyed political liberalisation and abundantly available technological diffusion allowing them to transform trade and production patterns; shaping what we know as "globalisation and the knowledge economy" (Audretsch and Sanders 2011). On the other hand, globalisation trends were feared to pose further marginalisation of poor communities or regions, thus leading to their exclusion from the world economy (Avgerou, 1998). This gap of haves and have-nots of ICTs and technology is referred to as the digital divide. And so, globalisation and its enabling ICT revolution were sold initially as benefiting everyone but

then this was modified to "potentially benefiting everyone" (Hanna, 2012). The debate on the appropriateness of innovation and ICTs for developing countries waged for some time (timeframe), with some theorists contending that "innovation does not have much of a positive impact on low to middle income countries and that these should rather focus on indigenous knowledge with a view to maintain the status quo.

There has been a gradual shift however, reflective of a larger trend in the field that acknowledged that 'no longer was it productive to debate whether computers are good or bad for developing countries?' but instead the need was to address the question, 'how can the potential of ICTs be harnessed to address locally relevant problems?' (Avgerou and Sahay, 2002:73). The OECD (2012) has existing empirical evidence to suggest a positive link between increasing internet adoption and use and economic growth, largely because of the productive networks that are created (Reynolds and Stryszowski 2013). In keeping with the trend of globalisation and the diffusion of innovation, the North plays an important role in pioneering technologies that are developed within the agile environments of parent countries, which are subsequently diffused into developing nations (Audretsch and Sanders 2011). According to Nelson (2008) countries aiming to catch up simply need to learn and master new ways of doing; and then take advantage of their low base to propel themselves as the next sites of convergence (Hanna 2012This brings to light the South vs. North discourse, whose proponents challenge widely held notions of the North expertise dictating to the learning South. Avgerou (1998) for one challenges these notions of developing countries being compelled to comply with standards of ‘best practice’ or ‘guide to best practice’ in the diffusion and adoption of ICTs. He opposes widely held views that developing countries ‘have no option but to adopt’ these ‘best practices’ and instead advocates for choice of diversity in the application of ICTs (Avgerou 1998). Implicit in his argument is the ability of states to take these technological advances and shape them to the context of the local.

2.4.3 ICTs and Mobile Phones

One of the mostly widely used tools in ICTs, in present day communications, is the mobile phone. Spencer and Smith (2010) point to an explosive growth in mobile phone access and reflects on the efforts of some private and non-profit operators supplying access to people at the "bottom of the pyramid" (BoP) by way of very low-margin, high-volume business models. Reflecting on the diffusion of mobile phones amongst the BoP, Heeks (2009) makes the observation that half of the world's population are mobile phone users and that the poorest regions record the fastest growth rates of mobile phones.

The relevance of mobile phones is not only in the connectivity it creates amongst individuals but has been acknowledged as a new platform of exchange that offers the potential of enhancing economic and social development (Reynolds and Stryszowski, 2013). Moreover, the globally connected infrastructure allows people to tap into new sources of income and employment, knowledge and industries (ibid). This impressive and sizable impact on economic development and the spread of mobile phones is attributed to its power to enhance market efficiencies (Blauw and Frances, 2011). Aker and Mbiti (2010) identify a proliferation of mobile phones based developments in a range of sectors, inclusive of agriculture, health, education and governance due to the exponential growth of mobile phones and their positive impacts on market efficiencies. Furthermore, the evolution towards 3G and 4G systems and the growth of more advanced, yet cheaper handsets will result in the expansion and sophistication of mobile applications and services (ibid).

In fact Waverman (2005) cited in Blauw and Franses (2011), states that developing countries have leapfrogged fixed telephone lines and moved straight to mobile phones. Also, the economic impact of mobile phones in the developing world is twice as large as in developed countries wherein "An entire range of economic services has emerged that are enabled by mobile phones: banking and financial transactions, marketing and distribution, employment services, personal services, and public services" (Spencer and Smith, 2010:11). The local dynamics of the developing nations has allowed mobile technology to strongly influence patterns of economic development. Mobile phones in emerging economies have

contributed to the emergence and growth of a variety of business and entrepreneurship opportunities in the informal sector (Aker and Mbiti, 2010).

Despite the emphasis placed on innovation (Hanna 2012), and the opportunities presented by globalisation and technologies such as ICTs (OECD 2007), many countries face difficulties in these areas (OECD, 2007). So whilst the population of Internet users jumped from 21 million to over 1.3 billion in just a twelve year timeframe between 1995 and 2007, the geographies of its genesis relate to the gross geographical diffusion and social unevenness of the technology (Klein and Unwin, 2009). The developing world has lagged much development in terms of ICTs and has invariably led to stagnant growth in these economies. Hanna (2012), sounds a warning that "while it is a promising development in support of inclusion, the diffusion of mobile phones does not eliminate the digital divide, nor other more fundamental divides like basic education" (ibid.,7). In addition, Klein and Unwin (2009), whilst acknowledging the potential of user generated content as a result of the increased usage of mobile telephones and the internet, state that most of the knowledge generation comes from expert and are thus not locally generated ideas. To unpack this further, this refers to the development of content such as applications or mobile driven solutions such as banking facilities from technicians employed by the banking institutions. This general absence of peer to peer sharing of ideas in communities of practice diminishes the true value of learning and empowerment. This also has the net effect of reducing the value of local content.

2.5 ICT and Economic Development

The economic environment in which firms operate are crucial for the development of their technological capabilities. Introduced by Friedman (in 1987), the national innovation system refers to the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies and useful knowledge (Djarova et al. 2008). Archibugi and Simonetti (1998), Edquist (2014) see innovation and the

systems of innovation as major drivers of long-term economic growth and employment for a country. Systems of innovation serve as overarching growth plans of how a nation sees economic development unfolding, which areas and sectors it will focus on to achieve its objectives. Niosi (2011) further states that innovation theory has largely been characterised by two slightly different competing perspectives; the first, as advanced by Lundvall (1996), sees innovative systems as a collection of organisations and institutions that contribute ultimately to innovation, with an emphasis on interactions and norms of these institutions. This perspective is based on the OECD Oslo Manual, in which innovation is defined as any improvement on process or product (Niosi, 2011). The second strand, as advocated by Nelson (2008) considers organisations that conduct Research and Development (R&D) and institutions of science, technology and innovation as the core of any innovation system.

Essentially, national systems of innovation and technology systems have been introduced in order to analyse the complex webs of interactions between institutions, market relations, social and institutional structures and industries in the innovation process (Archibugi and Simonetti 1998, Nelson 2008). A view from the south gives a more complete understanding of systems of innovation as an international web of institutions, both formal and informal, within which innovation occurs and is translated into an improvement in the wealth and the viability prospects of the system, usually defined at the national level (Scerri: 2013). Essential to the development process is the institutional arrangements that bind role players within an innovative system, with government policies and programmes being the most crucial.

The rise of ICTs and the impact they could potentially make within entire economies was demonstrated by the prolific rise of the East Asian economies, famously referred to as the Asian Tigers (Hanna, 2012). The mostly developing nations of this Asian bloc gradually emerged as an economic powerhouse through their adept exploitation of the Internet and digital technologies, which they used to become efficient producers. The Asian Tigers enlarged their gains from trade, attracted more capital, and "entered into advantageous virtuous spirals" (Yusuf and Nabeshima, cited in Hanna, 2012:5).

2.5.1 ICT4D

The National Systems of Innovation are not static however. They also evolve and adapt to the rapid changes taking shape in ICTs and Innovation spaces and are also shaped by these technological advances. Hanna (2012) points out that a there is an ever increasing trend of countries harnessing ICTs to transform their education systems, deepen their learning capabilities, and improve interactions among participants within their existing national innovation systems. This deepening reliance on ICTs introduces a particular strand of development, coined ICTs 4 (for) Development. It emphasises ICTs within the innovation system in pursuit of economic development.

In addition to the emergence of the Internet and the role of the World Wide Web in revolutionising communications, Heeks (2009) identifies the United Nations' Millennium Development Goals as an important global development agenda, which spurred the use of ICTs in driving economic development. The Millenium Development Goals (MDGs) with a strong focus on poverty reduction, health and education improvement and gender equality gave rise to ICT4D, a reinvigorated interest in how ICTs might be applied in developing countries (ibid.). ICTs became central in measuring the performance of nations against the MDGs, (Heeks, 2009). Data Driven Development, ICT4D relies extensively on data and information inputs typical of the knowledge economy (OECD 2014). There are a number of viewpoints however on the ideal ecosystem for ICT4D, as discussed by Heeks (2009) Hanna (2012), OECD (2014) and Matzat and Sadowski (2011). The elements of the ideal ecosystem from each of the authors, can be synthesised and grouped under five areas as adopted from Spencer and Smith (2010), consisting of connectivity and universal access; economic and social services; openness in all layers of society; innovation; and Human Development.

Connectivity and Universal Access: Connectivity is the basis on which all the potential benefits and costs of ICTs rest (Spencer and Smith 2010). According the Hanna (2012) the adoption and use of technology is like a chain reaction. As the number of users grows, the positive spin-offs for users increase. With an increase in users, the market builds on itself and adoption and use becomes worthwhile for the next person, leading to a virtuous cycle.

Economic and Social Services: This pillar, according to Spencer and Smith (2010) relate to identified services that speak to the needs of poor communities.

Innovation: Again, innovation in this sense relates to the physical aspects of innovation, resulting in technological developments and also reflects the ideological or imbedded principle of innovation.

Human Development: 'Human Development relates to an increase of attention to individual, external, and group capabilities and freedoms, regarding these as highest-level development objectives. Inspired by Sen's capability approach, this movement advances combinations of economic development, social justice, and social choice—the last being of particular importance for public goods, where markets do not function adequately, or in some cases, do not function at all' (Spencer and Smith, 2010:13).

Openness in all layers of society: This pillar is one that started before open source software and "access to knowledge" and relates to the availability of knowledge across all aspects of life. (Spence and Smith 2010:14).

2.6 Conclusion

Economic development is a disruptive and evolutionary process capable of bringing about changes to the economic well-being of the poorer portion of a country's population. Economic development is a choice however and how a country positions and pursues its goals is an indication of the desired economic outcome. Economic growth is a positive for the economic profile of any country, bolstering its economic stability, competitiveness and its ability to attract foreign direct investment from the international flow of money. Economic development however is an obvious policy choice for a developing nation over economic growth, given the transformation aspect of development.

This chapter took core concepts as emerged from CMDS schools of thought and used these to investigate further how they contribute to the relationship between ICTs and economic development. A number of considerations or sub themes are important in the theoretical

construct of ICT driven development. These relate to the physical components of ICTs, consisting of the pervasive and ubiquitous nature of these technologies and the potential they have of pinning development around these. We then have important policy considerations in respect of the human development aspect, inclusive of knowledge, reflecting the treatment of local communities, their skills sets and abilities to drive innovation and ICTs so that they speak to local dynamics through content of ICT driven solutions. Whilst a clear linkage can be drawn between ICTs and economic development, we are also cautioned against an assumption that the global phenomena of digital marginalisation will be automatically overcome through the introduction of technology or spread of mobile devices. ICT4D as a development concept stems from an increasing need to build in the human capabilities as integral component of ICTs and technological developments. The pillars of ICT4D, as highlighted above, will be fleshed out in subsequent chapters, interrogating their relevance as planning response for Soweto, Johannesburg.

Chapter 3: Research Method

3.1 Introduction

The research objectives are to explore the relationship between the implementation of ICT innovations and economic development. Using an existing innovation in the form of a technology start-up being implemented in Soweto, Johannesburg, the intention is to understand the extent to which the technology can impact on the economic development of businesses in Soweto. This will be undertaken through the use of quantitative research instruments, inclusive of observations, surveys and data collection amongst small and medium and micro businesses operating in Soweto, Johannesburg.

3.2 TEA (Township Ecosystem App)

"Innovation can be legitimately summarised as the process of introducing something new that creates value" (Voeten, et al. (2011: 99). The choice of TEA, a new innovation at pilot phase, will help contribute knowledge to the discourse on ICT, innovation and economic development in the following key areas: Understanding the appetite of small business for the use of ICT as a means to grow their businesses; the experiences and challenges faced by start-up entrepreneurs operating in the ICT sector and; the ecosystems necessary for small business to build confidence and thrive through ICT innovations.

The objectives are to explore the implementation of ICT innovations and determine whether economic growth and development can be traced to these interventions. I intend to do this through observations of an existing innovation that has been implemented in Soweto by iTea, a tech start-up company. The company has developed a mobile application called the Township Economy App (TEA), which is a communication platform aimed at increasing business interaction with neighbouring businesses leading to more economic capturing of consumers within the townships. The App is being implemented in Soweto as a pilot phase. iTea was awarded with a top ten achievement in the City of Johannesburg's Hack.Jozi Challenge in 2015 for their TEA innovation.

Sarantakos (2005) makes the point that quantitative research supports objectivity, an important principle of social enquiry. He further states that "The logic of objectivity rests here on the argument that research has a task of capturing and presenting as it is and not as it is interpreted, imagined or wanted it to be by the investigator (Sarantankos, 2015:92). An important element of the research method is data collection, captured through the use of surveys amongst businesses.

An important feature of a quantitative research approach is the generalisability of the data collected. "In social research, the generalisability refers to the capacity of a study to extrapolate the relevance of its findings beyond the boundaries of the sample" (Sarantankos 2005:98). In terms of sampling, the initial aim of the research was to target all 150 businesses registered on TEA but due to certain limitations this was capped at 80 businesses. This represents 53 percent of the businesses registered on the App, which fares well in terms of generalisability.

The research will rely on additional scientific or inductive generalisations, and also incorporate statistical methods and techniques to estimate the level of generalisability.

3.3 Data Collection

TEA has been introduced to some 150 businesses in the various neighbourhoods of Soweto. The strategy applicable in measuring the impact of the technology within the area will consist of structured interviews to all businesses (annexure A). The information collected through the survey sought to understand the following key areas: The level of ICT usage amongst township businesses (inclusive of social media such as Facebook, Twitter and Chat Services); The relationships that businesses have with existing businesses in Soweto; the extent to which businesses have adopted and made use of the new technology (TEA) introduced to them; and the extent of knowledge amongst business owners of the City of Johannesburg's economic development programmes (inclusive of free WiFi Hotspots).

This data collection entailed face to face interviews along a set of structured questions that businesses were asked to respond to. From the iTea website, details of businesses could be sourced such as the location, contact information and type of business activity. This information was placed on a spreadsheet and interviews scheduled in accordance to physical location of businesses. An attempt was made to group businesses closest to each other, allowing a more efficient approach given the geographic spread of businesses registered on the TEA Platform. The use of field agents was thus necessary in order to cover all the businesses registered on the TEA platform, which span the entire area of Soweto. Three agents were trained, together with an additional two iTea team members. Attempting to collect data from 150 businesses, who are busy running their businesses is quite a difficult task. Naturally, this then entailed a significant amount of planning, with meetings held every night before interviews were scheduled and conducted. This was primarily to confirm availability of businesses and planning of routes and resources needed.

With the assistance of the iTea team, additional information such as the gender and age of business owners was extrapolated from the backhaul information of the TEA platform. The data will be used to analyse the experience of the introduction of an ICT technology within a South African Township and to estimate the level of generalisability on the attitudes and trends of local Soweto based businesses towards ICTs. Observations in this regard will not be limited to the empirical data and may be supplemented by other forms of information gathering, inclusive of personal observations, during the course of the interviews and visits to Soweto.

The research report has made extensive reliance on ICT and economic development literature, used throughout the duration of the research. The author has spent significant time engaging with ICT related journals to pick up on development issues related to the subject, which have further spurred interest in particular areas during the research period.

3.4 Ethical Considerations

Each of the interviews conducted was preceded by introductory remarks reflecting the nature of the research and the intended use of the information to be provided by interviewees. Participants were advised that they are not compelled to partake in the interview if they felt uncomfortable, at any time during the course of the interview. Given that the businesses were already registered on the TEA App, it did allow for easier interactions as the business owners could identify with the product and were thus open to discussing the questions in greater detail.

Being an employee of the City of Johannesburg, occupying a senior position within the department of economic development, removing oneself from the position and applying an academic lens from which to assess was a challenge. However, it was important to observe such in order that my influence in the organisation does not result in me having undue influences over colleagues and processes. To this end, I opted not to engage in interviews with respective project managers linked to any of the programmes I looked closely into. This compelled me to seek information in a more objective fashion without necessarily overstepping or acting in an unethical manner.

3.5 Research Limitations

Some of these limitations include difficulty in reaching business owners and individuals of authority able to speak on the experiences and practices of businesses. Many individuals conduct other activities in addition to the businesses they run, reducing their availability in the daytime. Geographically the businesses are spread throughout Soweto, increasing the area to be covered and limiting the amount of time available to coordinate interviews. This limits the findings to just 80 businesses instead of the full 150 as registered onto the platform. Beyond this as well is that the number of businesses interviewed in relation to the number of businesses operating in Soweto, even in a section of the township, does not allow sufficient representation and in turn extrapolation.

An important area of enquiry for the study is in relation to the digital divide and perceptions of end users towards technology. It is generally expected that the elderly will be most

affected by the digital divide, given our socio-economic circumstances where black adults in a particular era have been excluded in a number of ways that affects their access to technology and ICTs. However, an exception may be applicable when we consider business owners and possible empowerment they may enjoy over their peers, particularly in relation to education and their exposure to technology in the business environment. Age is therefore an important element for consideration as it gives us insight into the extent of the digital divide; whom it affects and necessary interventions and recommendations that may be proposed by the research report. The back-end information as available from the iTea team has a number of gaps in terms of age related information, with over a third of the respondents not indicating their age. This has the effects of limiting a key area of enquiry.

Interviews with the relevant role players in the programmes integral to the research report, such as the #Hack.Jozi Challenge could have provided greater insight than reading materials associated with the programme. This would have given greater insight in terms of what the city of Johannesburg hoped to achieve with the programme, beyond what has been presented so far.

3.6 Reflections on Research

The results of the research are not fully representative of the business community in Soweto as the sample size is low. However, in relation to the number of businesses registered onto the TEA App, the findings of the research do provide a good indication on the behaviours of businesses on this platform. The findings reflect the limited use of an important enabler of social interactions as well as business development amongst small businesses in Soweto. The research is relevant for the discourse on ICTs and enable further enquiry into the potential of ICTs for their abilities to enhance the business community in South Africa. An important angle is the ability to understand how existing technologies or successful platforms are in fact influencing opportunities amongst businesses within the local economic development space in Johannesburg, South Africa.

Chapter 4: iTea and the Start-up Experience in Soweto

4.1 Introduction

"*Innovation can be legitimately summarised as the process of introducing something new that creates value*" (Voeten, et al. (2011: 99).

In 2015, the City of Johannesburg held its inaugural competition, the #Hack.Jozi Challenge. Invitations were extended to innovators and start-ups to submit ideas or solutions to everyday challenges facing the residents of the city of Johannesburg (COJ 2015)[1]. iTea[2] was one of 143 innovators, tech start-ups to emerge with a proposed solution to the perceived slow development and high failure rate of township businesses.

In their online submission for the competition, the group reflect on their prolonged observations of small businesses within the neighbourhood of Soweto. Whilst seated at a Bus Rapid Transit (BRT) Station in Orlando, Soweto, the team speak of a largely survivalist nature of township businesses, possible reasons for the high failure rates and slow pace of growth amongst businesses, with the odd success story every so often. The team stumbles upon an idea to build an interactive ICT-based platform to help local businesses attract more customers and grow their businesses through collaboration amongst each other. Their idea is driven by the available City of Johannesburg's free WiFi network, allowing the team to link the problems they perceive of Soweto businesses and ICT as a possible solution to these. Over several months, the team's idea evolves from a simple business directory into an

[1] See introductory chapter for COJ intent on the #Hack.Jozi Competition
[2] iTea being the name of the start-up company

interactive platform that allows local businesses to build synergy and create economies of scale. They coin their idea as the Township Economy App or TEA[3] as its acronym.

This chapter reflects on the journey taken into the ecosystem of small businesses operating in Soweto. The journey is a two-folded experience, consisting firstly of open-ended engagements held with businesses as part of the iTea team's drive to register businesses onto their online platform. This part of the journey spanned several months with the iTea team travelling from one 'kasi'[4] to the next, meeting different business owners, listening and engaging on their everyday experiences, their aspirations and challenges.

The second part of the journey consisted of targeted survey interviews of businesses registered onto the TEA platform. The information collected through the survey sought to understand the following key areas: The level of ICT usage amongst township businesses (inclusive of social media such as Facebook, Twitter and Chat Services); The relationships that businesses have with their customers and business counterparts in Soweto and beyond; the extent to which businesses have adopted and made use of the new technology platform (TEA) on which they are all registered ; and the extent to which businesses operating in Soweto are aware of the City of Johannesburg's business support programmes and the City's free WiFi and;. The lived experience through direct engagements with the various businesses enriched the findings of the survey, allowing a more involved and critical insight into the business environment of Soweto based businesses.

As a new innovation at pilot phase, TEA will help contribute knowledge to the discourse on ICT, innovation and economic development in the following key areas: Understanding the appetite of small business for the use of ICT as a means to grow their businesses; the experiences and challenges faced by start-up entrepreneurs operating in the ICT sector and; the ecosystems necessary for small business to build confidence and thrive through ICT innovations.

[3] TEA representing the digital platform created by the start-up (Township Economy App)
[4] Kasi being slang for a description of a neighbourhood

The chapter is structured into four parts, commencing with an insight of the iTea Start-up and their value proposition and functionalities of the App. Secondly, the chapter will discuss findings of the interviews conducted with businesses registered onto the TEA platform. This looks at critical areas such as the reliance on technology, the connections businesses have we each other and how they communicate. The third section will look into the relationship that the business community enjoys with the local authority, being the City of Johannesburg, through an enquiry on businesses' knowledge of COJ support programmes and ICT infrastructure. The last section entails a deep analysis on the extent of ICT usage amongst Soweto businesses and possible factors that are influencing the extent of ICT usage amongst these businesses.

4.2 TEA value proposition

"The future of poverty, as I see it, will be decided by the technological devices and services that are designed a priori for poor people" (Yunus (2008) cited in Spencer and Smith, 2010:14). Yunus (2008) paints the intrinsic value of technological innovations and makes us realise that these hold the key to our present day and future challenges. These solutions must be about the people they are meant to help and their design driven by the needs of those people. iTea sells the services on TEA as a direct response to the challenges faced by small business, first and foremost.

The following extract from the company's Business Plan (2015) illustrates in greater detail the objectives of the start-up company, and that the TEA platform offers registered businesses the following services:

- **Online Registration**

  Businesses are registered onto the TEA website, with their company details captured in their entirety, including the business location, services offered and contact details. Registration onto the TEA platform is free and businesses are never deleted, as long as the services offered by the business are legal. TEA is a web-based application and accessible via mobile devices with the intention to load the applications onto public kiosks to be located at strategic areas, such as community centres, clinics and public

facilities with WiFi networks, in and around townships. Registration onto the TEA Platform will provide businesses with the following specific business opportunities:

- **Connecting Businesses to Consumers**

The app captures key information of the business allowing a customer in any part of the township or anyone with access to internet the ability to locate this service. Businesses are able to post promotional material to their business pages, which are then notified to customers who have liked these businesses. When a business receives a rating on its service standards, this is communicated onto their 'wall' allowing other users to see this and in turn attracting additional customers for the business. This works out as a free advertising platform for businesses and encourages performance improvements by local businesses.

- **Connecting Consumers to Businesses**

To the iTea team, they see a marked difference between connecting businesses to consumers and connecting consumers to businesses. Their Business Plan offers some insight in that "We have identified that with township economies, money does not circulate or remain within. Local businesses capture a small percentage of the township money while the rest finds its way into the hands of big business and Mall retailers who have moved into the township"(iTea, 2015). iTea reflect on these being some of the strong sentiments they have dealt with in their engagement with township businesses. People simply do not buy from local businesses unless the products are sold by white businesses or come from the suburbs. Karuri-Sebina (2014) in her in-depth study of local businesses operating in Mamelodi, Tshwane, traces similar notions amongst black businesses. The intention of **TEA** is to reverse this trend by fostering stronger relations between consumers and the township businesses, simply by pointing out the multitude of township retailers and services available in almost every single township. The start-up believes that most consumers are unaware of the great services and products available to them and often find themselves looking elsewhere for services that are available locally.

- **Connecting Businesses to Businesses (Businesses doing business with each other)**

"The structure of the South African economy has been the most limiting factor to the majority of businesses still located within townships. It is monopolised by a minority few with the clout and economic muscle that creates barriers to entry for small and medium enterprises. Along the entire value chains in all sectors and industries, black businesses are hampered from participation because these are all controlled by monopolies" (iTea, 2015). **TEA** intends to provide link and strengthen emerging businesses along the entire value chain, so that through these linkages they are able to support one another and slowly take their share of these markets. The TEA Platform has a functionality where businesses can source services from other businesses within their location. For instance, a store owner within the retail sector looking for a delivery truck can post their need to businesses within the transport sector. This send out notification to businesses registered under the transportation sector, allowing them to access the business to business connection. iTea believe that the App, Township Economy App (TEA), has the potential to create economies of scale amongst township businesses, expand the businesses' access to local markets and open up opportunities for entrepreneurs to emerge and thrive.

In addition to the above features of the TEA online Platform, the start-up points to the following principles they say are applicable to their business model:

Bridging the digital divide: iTea have developed TEA as a free to market App, meaning that they do not charge users for downloading their product. This they believe is the first step in overcoming the digital divide, through the design of a product that can be shared extensively without a cost implication for the end user. Besides being a free product, iTea believe TEA empowers even business owners who are not tech savvy, in that they have targeted all types of businesses, irrespective of the end user's capabilities to interact with the App or technology as a whole. The team make an example of an elderly lady who sells cakes by the order who is only known by her immediate community that once she is registered onto TEA, she is

- **Proximity to the problem**: iTea believe that they are well placed to provide a lasting solution to the problems of small business failures and lack of growth. For iTea, they indicate the importance of solutions that are driven by passion and intended to make a difference to the situation of small businesses in Soweto. Unlike their counterparts who had gone around charging businesses for services that were never delivered, iTea believe that their product is work in constant progress. They explain that their product has undergone a number of changes and iterations because the business is tailored to the needs of Soweto businesses and gaps that have been identified during the course of interactions with these businesses.

- **Hand-holding for local businesses**[5]: the iTea team indicate that they have noticed a disturbing trend amongst business owners, particularly the elderly, of being technologically averse. They reflect that they have met numerous business owners on their registration drives who become negative as soon as they hear of the technology involved in registration onto the TEA platform, for instance. iTea believe that the best means of overcoming such a situation is that communities must be able to see and touch technology. The team reflect on their kiosk component, which they intend to roll out in public facilities as part of their subsequent development phases where the sight of the technology is hoped will spark interest and encourage use of it.

4.3 The Case Study

TEA has some 150 businesses registered on its website, www.itea.co.za. Contact was made with all businesses found on the TEA website, either through scheduled interviews and physical visit to each of the businesses. Due to a number of factors, such as some business

[5] Anecdote: *On a drive around with the team one Saturday afternoon, the team approached a lady selling freshly frozen fish from a trolley bin. The team engaged with the lady and observed that the trolley bin was brand new and thus very clean but they engaged with her on what she thought her clients' perception is, when she opens what they expect to be a rubbish bin. The team then proceeded to show the informal trader of a number of businesses in an around Soweto who could easily design and build her a more convenient trolley for her fish and others who could assist with branding material. The passion displayed by the team was there for one to observe*.

owners being unavailable over a prolonged period, some dishonoured appointments; the intention of interviewing all 150 businesses on TEA was not achieved. Of the 150 TEA registered businesses, 80 were interviewed, giving an above average of 53% successful interviews concluded. This above average number does allow the research to form conclusive generalisations however about the businesses registered onto the website, which creates credibility for the outcomes of the research.

4.3.1 Profile of Businesses

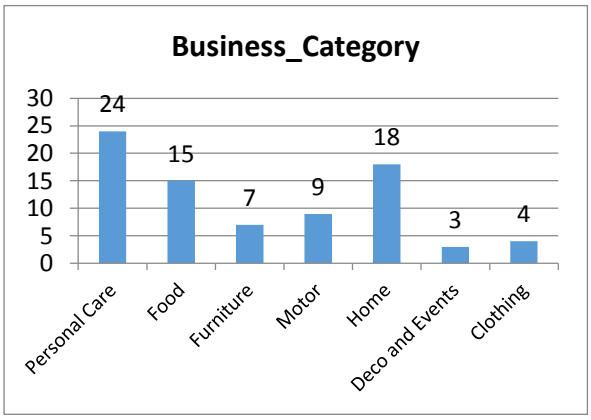
iTea have organised businesses on their website in accordance to ten business categories. Of the ten business categories, businesses in the Clothing, Deco and Events, Food, Furniture, Home, Motor and Personal Care categories were interviewed, covering only seven business categories. Businesses falling into the following three categories were not covered: medical, educational and real estate. All the businesses registered on TEA are SMME in nature.

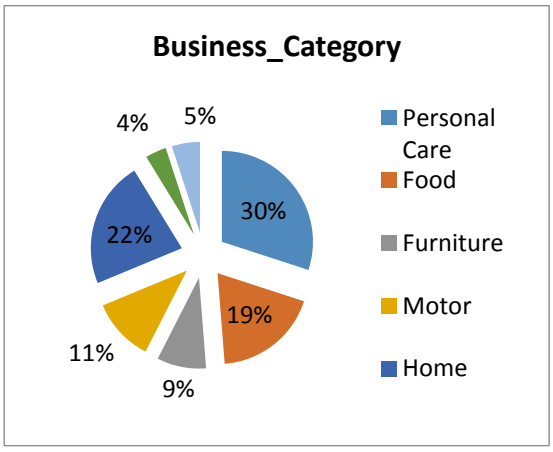
Figures 1 and 2 below illustrate the distribution of businesses across the categories. The category with the most number of successful businesses interviewed is Personal Care, which consists of salons, hairdressers, a gym, Tattoo Artists, beauty stores and related products. The second highest category is food, which comprises of restaurants and fast-food outlets (buy and braai facilities), bakeries and butcheries. The category also has a few specialised businesses such as a juice blending company. The Home Category contains the largest variety of businesses ranging from steelworks, hardware and appliance repair businesses, laundromats and dry cleaners, pet stores, florists and interior decorators. The category also has several specialised businesses including a manufacturer of energy efficient products, such as solar lights.

The furniture and upholstery industry was classified as a stand-alone category, instead of being incorporated into the home category, given the large number of businesses in this line of work. Only seven interviews were conducted successfully with owners of the furniture

sector however. The city of Johannesburg (2016) has identified the furniture sector as an area of interest, given its growth potential. The motor category contains largely specialised motor vehicle relates services such as spray-painters, tyre services, auto parts and mechanical services. There are a number of car wash facilities found within the category too. The Deco and Events Category and the Clothing Category contained the least number of successful interviews, both with only two interviews concluded successfully.

Figure 1 & 2: Number of Businesses per category





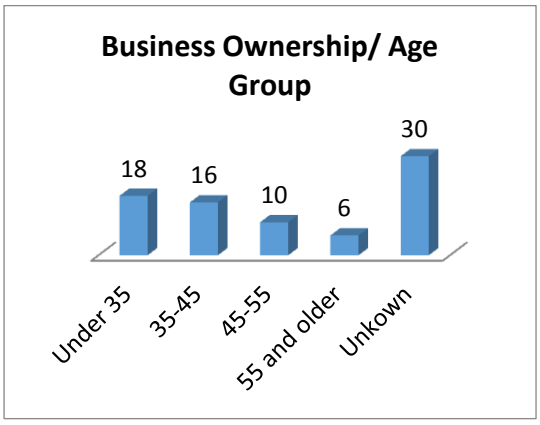
4.3.2 Demographics of Business Owners

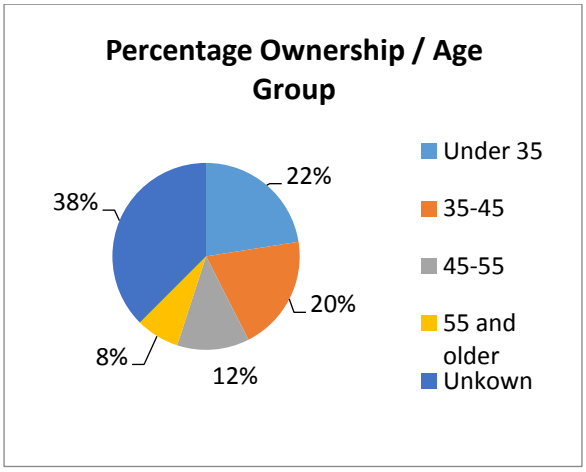
All businesses interviewed are black owned, reflective of the demographics of Soweto. A total of 80% of the businesses interviewed are male owned, a consistent and surprising finding across all business categories. There is no particular concentration of females and males in any of the business categories, save for the absence of female business owners in the motor, furniture and Events categories. Age related data extrapolated from iTea indicates that the majority of business owners did not disclosed their age when registering on the platform, with thirty of the eighty business owners' age classified as unknown. This represents 38% of interviewed businesses, a big portion of the business and thus impacts significantly what can be read insofar as age is concerned. This lack of disclosure points to a trust issue that business owners may have of the start-up. There is nonetheless a minimum age of eighteen years applicable for registration onto the TEA platform, which prevents the

possibility of underage businesses being registered onto the platform. Later in the chapter, the age of businesses will be looked closely into, for additional extrapolation and analysis.

Figure 3 and 4 below reflects the distribution of businesses across the age groups. Amongst the known age groups, a distinct pattern of declining business numbers is observed, as one moves up the age groupings. Those under the age of thirty-five account for eighteen of the eighty businesses (22%), declining steadily throughout the groups with those aged fifty-five and older owning just six of the eighty businesses interviewed (8%).

Figure 3 & 4: Business Ownership per Age Group





The large number of business owners whose age is not captured is a missed opportunity to gain extensive insight into how age relates to the use of ICTs. There is an expectation that the elderly, for instance, would be less inclined to use technology (technophobes). An enquiry into the duration of businesses would have assisted with an understanding of the type of businesses that are able to withstand the high failure rate amongst small businesses.

4.4 ICT Use

Businesses were asked a series of questions on their use of ICTs in their business activities. Forty nine of the eighty business owners (61%) indicated that they make use of some form of ICTs in their business activities. Businesses were also asked to reflect how often they made use of each technology, allowing a breakdown between regular users (those making use of a technology more than ten times in a week), intermediary users (who make between five and ten uses in a week) and occasional users (making use of a technology less than five times in a week). The timeframe of a week was decided, as opposed to a longer timeframe so that businesses would be able to provide accurate reflections on their use of technology. Having engaged with businesses during the registration phases of TEA, it also became apparent that the numbers or intensity of use would be conservative and as such the unit of measurement was adjusted in line with this low expectation of use. The types of ICTs used by businesses and frequency of use is captured in Figures 5 and 6, respectively.

Chat services such as WhatsApp featured as the most widely used communication tool, with thirty eight users. Sixteen regular users, fifteen intermediary and seven occasional users. The second most widely used ICT amongst the businesses is Facebook, with a total of thirty-two (32) users. The majority of Facebook users, sixteen, indicated making use of the technology less than five times in a week. The number of intermediary users dropping significantly to four, whilst regular users were counted at twelve.

Google use came in third place with a total of ten users. Six of them being regular users with two intermediary and four occasional users. Use of other ICTs such as Instagram, Twitter, email and others is minimal with single digit usage recorded across the eighty interviewed businesses. Three businesses interviewed indicated that they had built their own platforms

for conducting business. Two of these businesses are located in the Personal Care category and the other is in the events and Deco category and they have developed their own websites where clients can make contact directly with the respective businesses.

Figure 5: ICT Used by Businesses

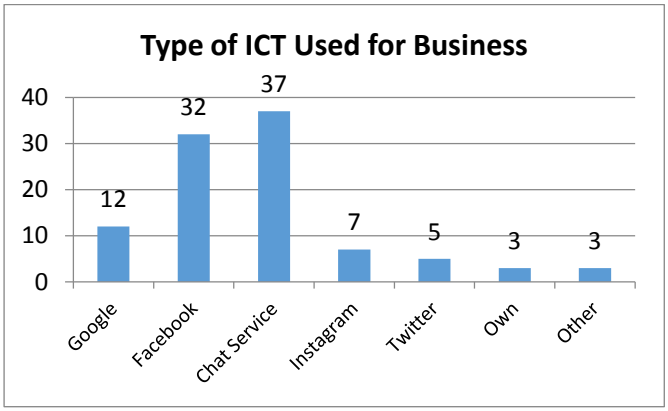
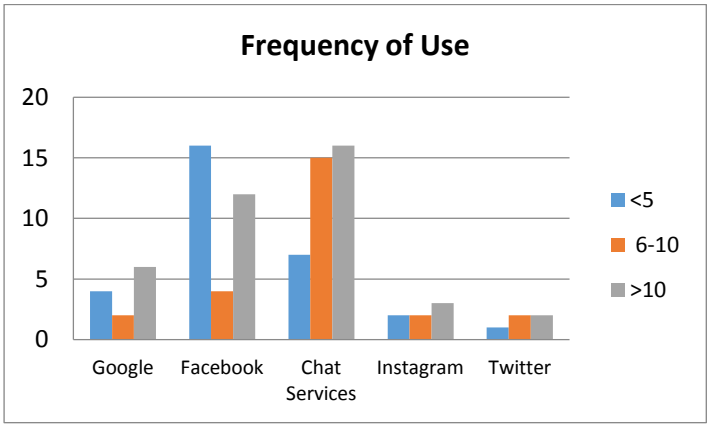


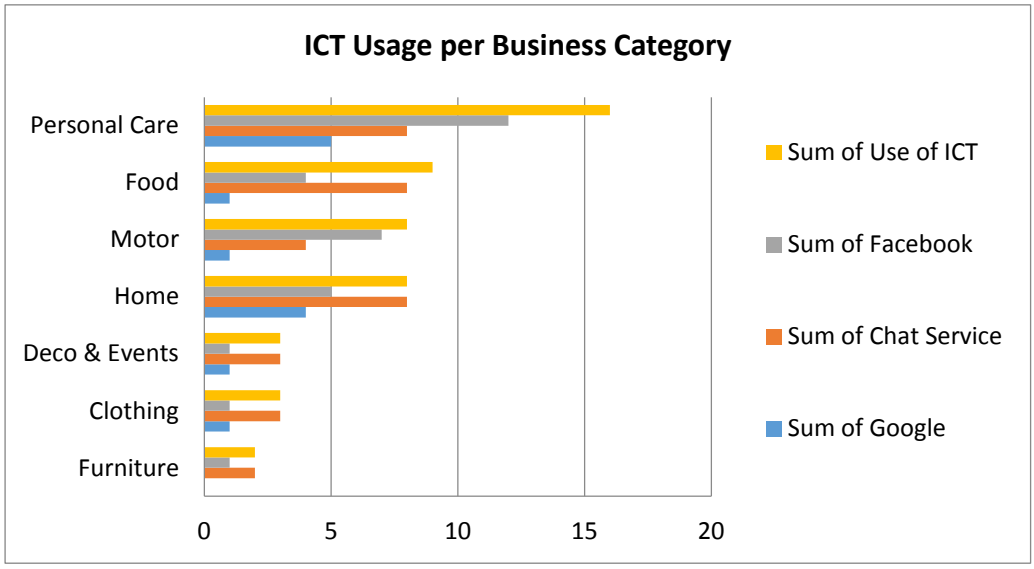
Figure 6: Frequency of ICT Use by Businesses(week)



An analysis on the level of ICT usage across the top four business categories reveals more insight on the type of technology per industry, as displayed under Figure 7 herein. Generally, ICTs are mostly used by businesses in the Personal Care Category, with the second placed business categories (food, home and motor) all at 50% of Personal Care. Chat services enjoy equal usage in the Food, Home and Personal Care categories, while it is half of this figure amongst businesses in the motor category. The use of Facebook tappers from the highest

category, Personal Care, followed by the motor, home and food categories, respectively. The use of Google is surprisingly low amongst all business categories, with the personal care category recording the highest usage of the Google service.

Figure 7: ICT Use per Business Category



The use if ICTs seems to lean towards chat services and Facebook. Chat services, WhatsApp in particular, have become a very cheap communication tool. One can send messages with minimal airtime of data on all the network providers in South Africa. In a 2015 study undertaken by www.mybroadband.co.za, they found that if SMS were priced like data, the cost of a WhatsApp message would cost a fraction of a cent (Vermeulen, 2015). WhasApp also permits the sharing of media content at low data costs, almost eliminating the need for SMS communication over conventional cellphone lines.

Facebook, the second most widely used communication tool amongst the interviewed businesses, is a highly interactive platform that connects people, their interests, preferred media feeds and any other features of social life. Over the years, Facebook has evolved to carry more advertising content that business can easily leverage off. Both these

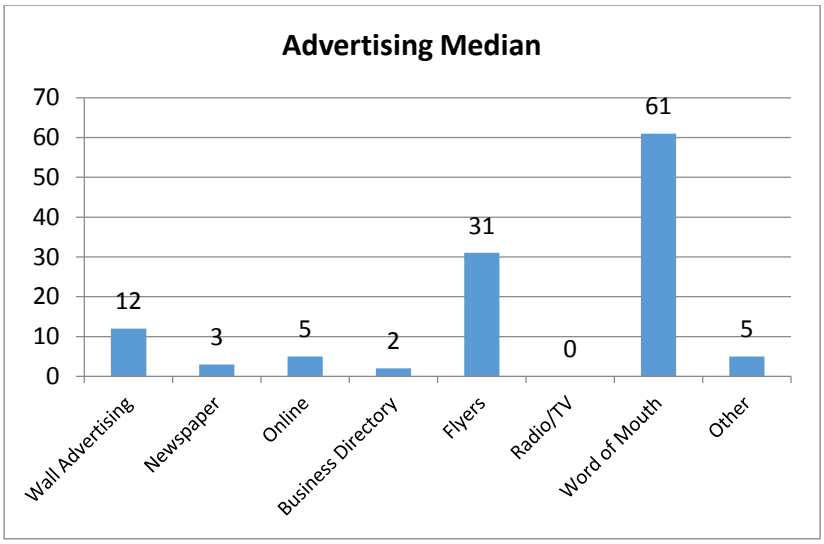
communication tools have a relatively low cost implication and whilst Facebook is a degree more complicated than WhatsApp Chat, both tools enjoy good usage amongst businesses.

Google on the other hand is a globally renowned tool for information sourcing and has also evolved into the advertising space, targeting all levels of formal business activity. On one of the registration drives with the iTea Team, two businesses that were approached for registration, declined registration onto the TEA platform, citing their presence on Google as sufficient to cover their needs. The businesses indicated that Google had approached them and registered their businesses onto Google, for free. However, very few businesses on the TEA platform indicated a strong use of Google, even in instances where there businesses are already active on Google.

4.5 Business Relations

The next area of enquiry was on the relationship that businesses build with potential customers and the extent to which ICTs intersect and influence this area. Businesses were firstly asked to respond on the types of median they use to advertise their businesses. Sixty-one (76%) of the eighty businesses reported having relied on Word of Mouth, directly with clients and potential customers. Thirty one businesses (38%) made use of Flyers and pamphlets to advertise their businesses. The third most popular form of advertising is that of mural adverts, with twelve businesses (15%) making use of this form of advertising. The other forms of advertising, inclusive of online presence, newspapers and business directories are not used extensively, with a total of just fifteen users making use of these tools. Figure 8 below demonstrates the large fluctuations in reliance of different advertising median, with Word of Mouth leading the chart.

Figure 8: Business Advertising Tools



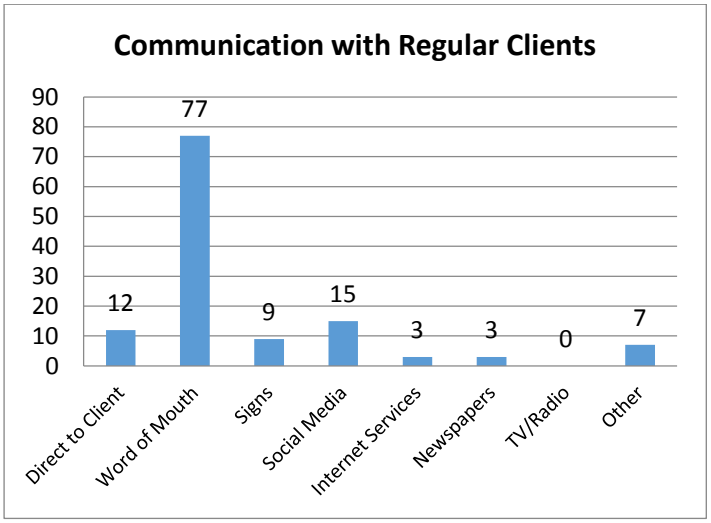
The reliance on Word of Mouth tells us that human interaction is a very important feature of business interactions. It is clear again through the extensive use of flyers, followed by wall advertising that businesses in general have not adopted or moved over entirely onto online services as a means of communication. Online services, business directories and newspapers are hardly relevant as communication median for businesses.

4.5.1 Business to Consumer Connections

Businesses were asked to reflect on whether they had a relationship with a set group of clients, to which almost all businesses reflected positively. Seventy-nine of the eighty businesses have regular clients. Although these businesses interact with their clients at disparate time intervals, where for instance a furniture upholster transacts with their clients at more irregular intervals than the local nail parlour, they all enjoy regular cliental. Asked on how they communicate specials and new product offerings to their regular clients, the response of seventy-seven (96%) businesses said they rely on Word of Mouth. The next most popular communication tool is through social media, with the number of users dropping down drastically from that of Word of Mouth to fifteen businesses (19%). This is followed by direct client contact and signage with twelve and nine businesses, respectively.

The rest of the communications tools such as the internet, newspapers and other median record very low usage amongst businesses.

Figure 9: Business Communication tools to regular cliental



Again, Word of Mouth is significantly more popular and used extensively by businesses. On a similar basis, direct client to client engagement as well as social media (predominantly WhatsApp) are the next most used platforms, again reflecting the importance of direct communication over other social media medians such as Facebook and Instagram.

4.5.2 Business to Business Connections

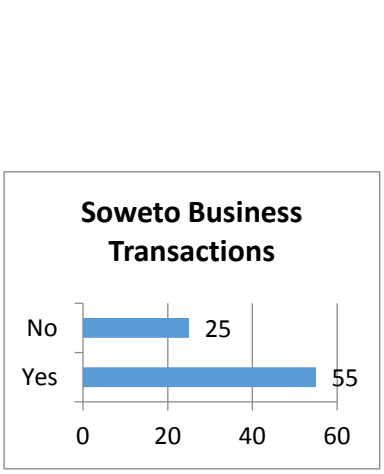
An important element of business as identified by iTea, is business transactions amongst local businesses. This section relates to the relationships that local businesses enjoy with one another. The iTea team believe strongly that this is an area of potential that can build credibility of businesses and ultimately attract greater customer numbers. Businesses are encouraged through the TEA platform to transact with one another through a Business to Business feature built into TEA. A business is able to post a 'need' to any of the categories, which alerts businesses in the recipient category that there is a potential job available to them. An example of this is an events company looking for a delivery van to transport goods from one point to the next. The events company would post their transportation need onto the motor category, which then triggers a notification to business owners on the Motor

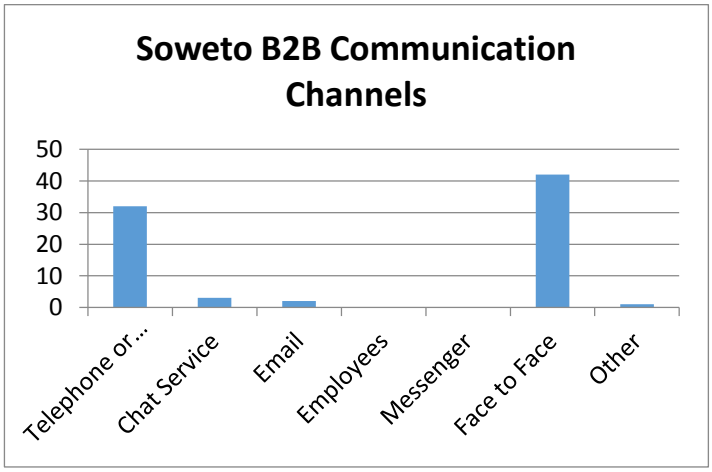
Category of the specific need. An interested business owner is then able to connect with the business that posted the need and can potentially transact with them.

This aspect is particularly important in understanding a business' awareness of economic connections in close proximity to their business, wherefrom they can build economies of scale. This section thus sought to understand the extent to which local businesses relied on their business counterparts in conducting their business. Businesses were asked whether they relate and transact with other businesses within Soweto. They were also asked to reflect on where some of the businesses they transact with are located, be it within Soweto or outside of the township.

Figure 10 and 11 below demonstrate the performance of Businesses in relation to intra Soweto business to business transactions and communication tools used by these businesses. Figure 12 and 13 on the other hand reflect the number of external business to business connections by Soweto businesses and the communication tools they rely us, respectively. Fifty-five of the eighty businesses (68%) interviewed gave positive responses to local transactions within Soweto, whilst twenty five (31%) do not have local business connections. Sixty three (79%) businesses indicated that they transact with outside businesses, while only seventeen (21%) indicated that they have no business transactions outside of Soweto.

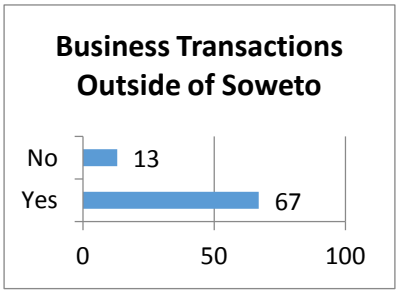
Figure 10 & 11: Soweto business transactions and communication tools between businesses

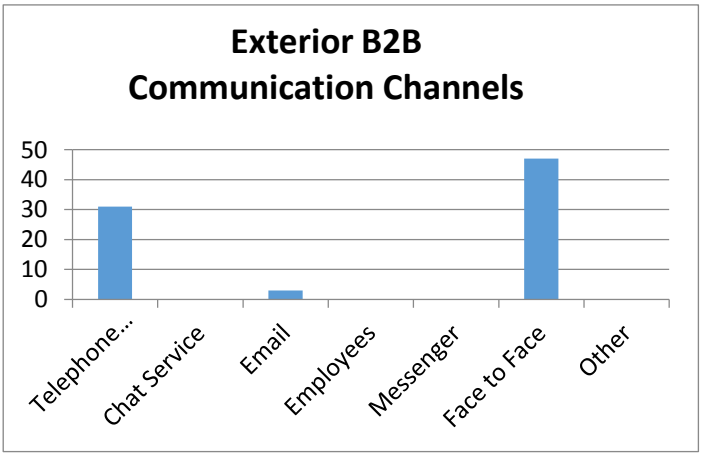




So whilst the number of businesses doing business within Soweto, again human contact is the preferred more of communication amongst businesses. Telephone usage however becomes an important median in instances where relations have been established, as can be read from the significant rise in telephone communications between businesses, versus communication with regular clients, for instance.

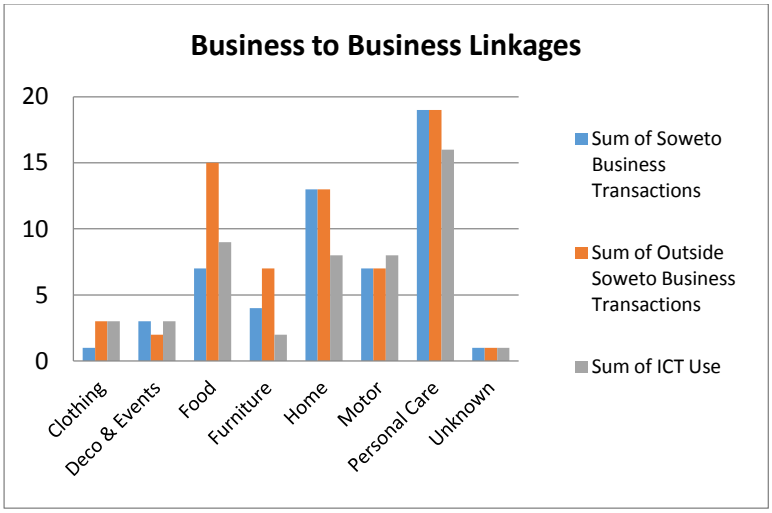
Figure 12 & 13: Soweto Outside Business Transactions and communication tools used with businesses





There are two distinct communication channels used extensively by businesses to interact with both outside and Soweto businesses. In both instances, the businesses rely more on face to face interactions, followed by telephone and cellphone calling to connect. Only in the instance of internal Soweto business transactions is there some chat services used to communicate with business partners. The other channels of communication, such as email, messenger services or employees of the businesses are virtually unused.

Figure 14: Business to Business Linkages per Category



On close inspection on how businesses transact locally and outside of Soweto, those within the Personal Care Category have the highest volume of local and exterior business connections, with nineteen positive responses in each respect. The Home and Motor categories also has equal local and exterior business connections, albeit at a reduced level to that of Personal Care.

The Food category, the third highest in terms of volume, displays a significantly greater proportion of external trade to that of local business connections. External trade is recorded at twice that of local business transactions. Similarly the Furniture and Clothing Categories reflected greater business transactions outside of Soweto than within. Again, the volumes of

external business transactions under the furniture and clothing categories were much reduced from those observed under the Food Category.

Interactions within the business ecosystem of Soweto are not just a linear activity between businesses to its consumers. It is an intricate web of connections from one business to the next, from one person to the next. Business owners transact within their neighbourhoods as well as outside of the immediate area of Soweto, for a number of reasons. In terms of trade outside of Soweto, most respondents reflected on the fact that some of the products they make use of are not available locally and are thus compelled to travel into the CBD or other economic nodes to source their stock. Those within the food category reflected on the need for bulk purchasing of products used in their businesses, which are not found within Soweto. Similarly, the furniture and clothing categories stated the absence of bulk materials and specialised suppliers of relevant materials as the main reasons for shopping outside of Soweto.

Whilst notions of perceived inferior offerings' of local products may be prevalent as observed by Karuri-Sebina (2014), most businesses that transact outside of Soweto point to the unavailability of products as a primary reason for sourcing products outside of the township. There is evidence from the existing Business to Business transactions that there is potential for increased local business transactions, if adequately exploited. One can trace standard business offerings across some of the categories interviewed. A salon in the Personal Care Category for instance, has a set number of hair products and ancillary inventory traceable across most salon businesses. None of the businesses indicated links with other salons or the pooling of resources for bulk purchasing. Although the value of business transactions made outside of Soweto was not quantified as part of the research questions, this clearly presents immense potential that needs more investigation. Activated, it could create greater purchasing power for businesses and also assist with minimising on other input costs of business such as transportation.

Although technology is used by some businesses to communicate with other businesses, human contact features strongly on how businesses interact with one another. Word of

Mouth is a strong feature of both new business and existing cliental across the business categories. This tells us that telecommunications whilst being an important tool, these are not necessarily viewed as business tools by local businesses. Word of Mouth for instance is still a very important means of engagement on the part of local businesses, with both consumers and amongst businesses

4.6 TEA Deployment and Usage

TEA was deployed amongst businesses and went live on 25 October 2015. The exercise of registering businesses onto the website continues. When interviews were conducted between May 2016 and August 2016, most of the businesses had been registered for a period of seven months onto TEA. In response to whether businesses had made use of TEA since they were registered onto the platform, only ten businesses responded positively (8%). Meaning seventy businesses (92%) had not made use of TEA. Reasons for businesses not making use of TEA are classified into four thematic areas; failure of the TEA platform, no perceived value of use, device related constraints and network related constraints. Five of the businesses gave more than one reason as to why they had not used the technology.

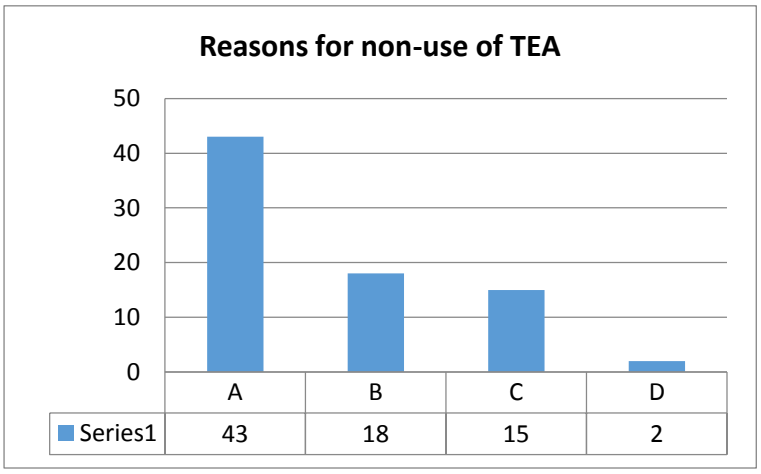
A. Failure of the TEA Platform: this includes businesses that were not equiped with the necessary information to be able to use the technology, as well as not receiving the necessary login details for the website or experiencing problems when loging onto the webiste or the TEA website being down or inaccessible. Forty-three businesses identified this as the primary reason they did not make use of TEA (53%). Most of these businesses pointed out that they did not receive login information, which is meant to automatically happen post their registration onto the platform.

B. No perceived value in use: Users not knowing what the use of TEA would do for their business; businesses who did not have the time or see any value to make use of the technology. Eighteen businesses identified the lack of value-add as a hinderance to having followed up on the use of TEA (22%). This again points to a lack of knowledge by businesses on the product offering and what it can potentially do for their growth.

C. Device related constraints: this covers respondents who lost handsets or those who could not connect to the internet due to the type of handsets they use. Fifteen businesses (19%) identified this as a reason, with the majority citing the loss of handsets, which was their point of contact with the iTea team.

D. Network constraints: where businesses could not connect to the internet due to network problems, including non-availability of network in an area or because data is expensive. This did not feature strongly as a deterent for use, with only two businesses reporting on this. Figure 15 below shows the distribution of non usage of TEA between the four categories, reflecting the large number of users who experienced failures on the part of the TEA Platform itself.

Figure 15: Businesses' Reasons for not making use of TEA



Of the ten businesses that had made use of TEA, all of them reported having made use of the technology less than five times. The majority of users emerged from the Personal Care category, with the rest made up of businesses from Home, Deco and Events and Motor categories. The businesses that made use of TEA are spread across Soweto and no distinct pattern can be read on this. There is an equal split between users below thirty-five and those in the thirty-five to forty-five age group, with only two users whose age is unknown.

Businesses were then asked to reflect on what areas of their business TEA could assist in and whether they would accept training on the use of TEA should it offer solutions to the areas identified. Sevently-nine of the eighty businesses responded positively to the offer of training to capacitate them to make use of TEA. Almost all businesses indicated that they wanted marketing assistance and to have greater access to their clients and new markets. Many of the businesses reflected on the mushrooming and growth of township malls as one of the major onslaughts to their businesses, which have increased competition for their service offerings, hence the need for marketing.

4.7 City of Johannesburg Business Support Interventions

The following sections looks at the environment facilitated by the City of Johannesburg, in order to gain a deeper understanding of opportunities presented to entrepreneurs or start-ups like iTea. The backbone of TEA for instance is in the broadband infrastructure and the WiFi hotspots the team believes they will use to get communities onto their digital platform. This is essential in unpacking the type of ecosystem entrepreneurs and SMMEs have at their disposal. The City of Johannesburg identifies Small and Micro Enterprises (SMME) as central in the economy of the city and a key business cluster to nurture in achieving economic growth/development (reference). The City of Johannesburg's long-term strategic vision is for an economy that is inclusive, liveable and prosperous for all (COJ 2015). In particular the department of Economic Development champions the city's approach in transforming the economy of Johannesburg and in addressing the triple challenge of unemployment, poverty and inequality. This the department aims to achieve through an emphasis on increased localisation of production and increased small entrepreneurship activity, just to mention a couple (COJ 2016).

In relation to small business support, the City of Johannesburg has established SMME Hubs throughout the seven administrative regions of the city. The hubs provide a range of services to small business that include business assessment and development plans, business training seminars, legal and tax advisory (such as company registration, tax

compliance and auditing), funding facilitation including product awareness and assistance with applications.

4.6.1 COJ WiFi Programme

In 2008, the City of Johannesburg initiated its ambitious citywide broadband infrastructure programme, the Joburg Broadband Project. The project is a 1150Km network of fibre-core, rolled out in the city and aimed at achieving the following objectives:

- Reduction in business operating costs
- Increasing ease of doing business
- Providing free WiFi services throughout the city, especially in poor areas

Talking on the importance of internet access in 2015, the Executive Mayor of Johannesburg reflected on internet and access to broadband as a basic human right in much the same way that shelter, sanitation and electricity are considered basic services (City of Johannesburg 2015). This is a significant step in advancing the importance of ICTs to Johannesburg communities. Similarly, on a national level and provincial level, there have been important pronouncements made on ICTs. In 2015 at the State of the Province Address, Gauteng Premier Makhura announced plans to make the Gauteng City Region 100% WiFi connected within a five year period.

The City of Johannesburg completed the Broadband Project in the year 2015 and then developed additional functions such as the free WiFi Programme as a means to expand the use of the broadband technology. The City of Johannesburg has leveraged off the Broadband infrastructure and rolled out WiFi access across the city. In the year 2016, the City had rolled out WiFi hotspots across the city, located at libraries, clinics and other municipal buildings. The City of Johannesburg has also rolled out the WiFi service along the Bus Rapid Transit (BRT) route from Soweto through to the inner city, allowing commuters uninterrupted internet access along the trip (COJ 2016).



Picture 1: Activity along the BRT in Diepkloof Soweto (source: own)

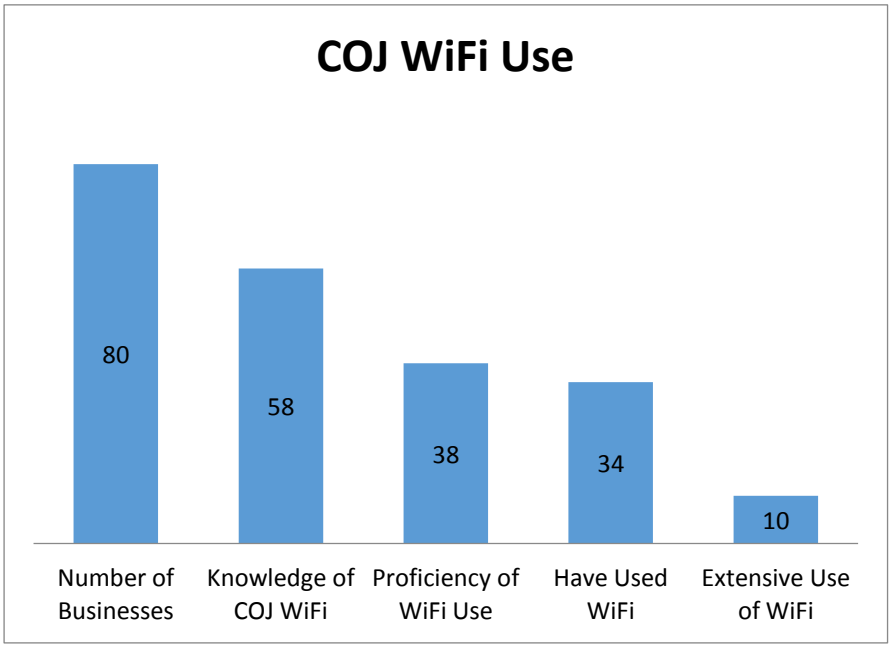


Picture 2: WiFi users seated along road guard rails in Diepkloof Soweto (source: own)

The BRT stations have become popular public destinations where young people, small business owners and students converge to connect onto the WiFi and make use of the internet. Businesses were asked on their knowledge of the city's free WiFi programme and whether they had made use of the COJ WiFi and the extent thereof. Figure 16 below captures the results of ICT usage amongst the eighty businesses. Fifty-eight (73%) of the businesses interviewed indicated that they knew of the WiFi whilst twenty-two answered negatively. Thirty-seven of the fifty-eight businesses indicated that they had good knowledge of how WiFi works (46% of total businesses).

Thirty-four of the businesses had in turn also made use of the WiFi network. This represents forty-two (42%) percent of the total number of businesses interviewed. The thirty-four businesses were further asked on their frequency of WiFi usage, to which only ten businesses had made use of the COJ WiFi more than ten times. This is a significant drop to 8% regular use. Twelve businesses indicated that they had used the WiFi between five and ten (5-10) times whilst another twelve indicated having used the WiFi no more than five times. This limited usage is an anomaly in what is a free service to both residents and businesses, yet is not being used extensively for business development. This prompts in-depth analysis, using a number of variables to understand potential factors responsible for this limited use of the WiFi.

Figure 16: Profile of COJ WiFi Use



4.6.2 COJ Digital Amabassadors Programme

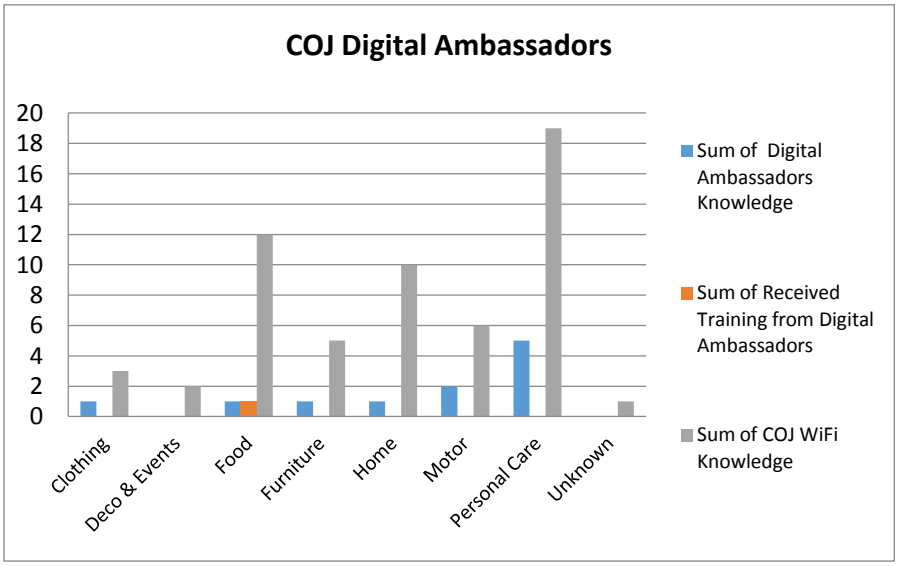
In 2015, the COJ introduced the Digital Ambassadors Programme. It was developed to take technology to the people in line with the roll out of 1000 WiFi hotspots throughout the city (COJ 2016b). The digital ambassadors were trained in business, digital and life skills and were provided with tablets and marketing materials, with the aim of reaching 750 000 residents of Johannesburg in targeted suburbs over an 18 month period (COJ 2016b). "Through the Digital Ambassadors Programme 'job seekers' will be turned into 'job makers'

to provide crucial services in the utilisation of the high speed broadband of the city. In addition to increasing the digital footprint of the city, the programme will further create a platform fo innovation, economic growth and social development' (ibid, 2016)

The programme consisted of trained youth targeting communities in Johannesburg and introducing them to the city's ICT offerings. The ambassadors would approach members of the public and ascertain whether they are aware of the city's various ICT offerings and proceed to empower them accordingly if they happen to be unaware of the various ICTs available to them. Each session would last a minimum of fifteen minutes while the member of public receive instruction on how to make use of the COJ free WiFi technology to access online services such as banking and digital map navigation as well as interacting with the Maru a Jozi (cloud) portal.

Businesses were asked to reflect on whether they had any knowledge of the Digital Ambassadors and whether they had also received training from the digital ambassadors. Eleven of the eighty businesses had knowledge of the Digitial Ambassadors with only one business owner having received training from the ambassador. Figure 17 below, demonstrates the limited extent to which businesses knew of and received training from the Digital Ambassadors Programme.

Figure 17: Digital Ambassadors Programme



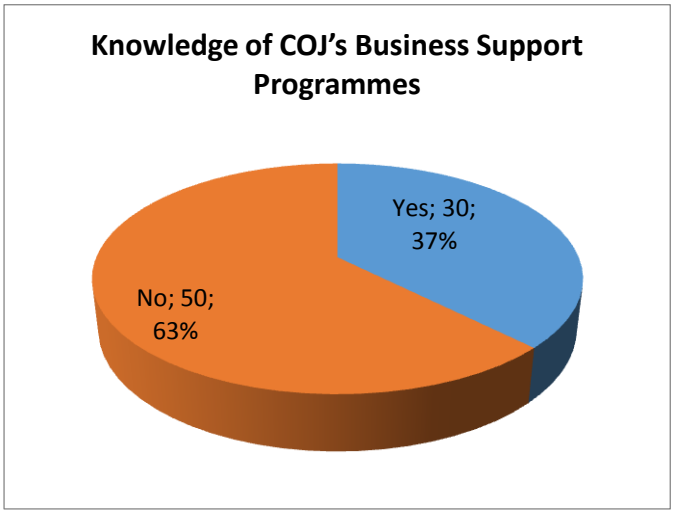
The commencement of interviews took place over a three month period, commencing from May 2016 and concluded at the end of July 2016.

This means at the time of interviews, the Digital Ambassadors programme had been in operation for a period of some ten months. Against a total of fifty-seven businesses that know of the WiFi project, the number of businesses trained reflects a significant gap in the city's intention of extensive knowledge and dissemination of the WiFi technology. This brings into question however whether the programme was rolled out in the most ideal manner, targeting the right audience and supplying the best content for residents to learn?

4.6.3 COJ SMME Business Support

The city offers a range of SMME support programmes, most notably through the SMME Hubs located in each of the city's administrative regions. The Soweto SMME Hub was launched in August 2015and had been in operational for a period of ten months when interviews were conducted with businesses. The city's overall SMME Programme has been in existence since 2008. Businesses were asked whether they knew of the city's business support programmes, the results of which are displayed in Figure 18 below. Fifty of the businesses (63%) indicated that they did not know of the COJ Support Programmes while thirty (37%) had knowledge of the support programmes. Nine of the businesses that know of the COJ support programme said they also had good knowledge of what the business support programme entails and had interacted with the SMMe Hubs. This translates to eleven percent (11%) of the businesses that have a good understanding of what is available to them from COJ insofar as support to grow their businesses.

Figure 18: Business' awareness of COJ Business Support Programmes



In the context of the economic challenges facing Johannesburg, such as the high unemployment levels and limited economic activity in Soweto, the limited knowledge by businesses of business support programmes within their locality is a problem. There is clearly a gap in how services are being rendered to businesses or in how the support is rolled out to small businesses in the townships.

4.8 Why is Technology not used more extensively?

The first step in gaining further insight into the limited use of the technology is to take a closer look at age as a potential factor. The age groups are split into four groupings, comprising of the youth (those aged eighteen to thirty-five); thirty-five to fifty-five (35-55), Fifty five and older and; the unknown age group (given that it consists of a large number of respondents). Social media is widely consumed as a source of entertainment and information for both young and old, alike, with the internet viewed as the backbone of ICTs. The youth however, are generally considered the largest consumers of ICTs.

4.8.1 Thirty-Five (35) and Below Age Group

Eighteen businesses were confirmed as being owned or run by youth. There are no youth owned businesses in the Clothing, Motor and Deco and Events categories. Figure 19 below illustrates that youth business owners make good use of ICTs in their businesses across the four categories, eleven of the eighteen businesses (61%). Similarly, eleven businesses also

make use of Chat Services in their business activities. The knowledge amongst businesses of the COJ WiFi is high, throughout the categories, with only four of the eighteen business owners unaware of the COJ WiFi. This translates to seventy-seven percent (77%) knowledge of the COJ WiFi, with usage amongst the eighteen businesses recorded at forty-four percent (44%), a decline of over thirty percent.

A look at the use of ICTs within the Business Categories by those under the age of 35 reveals that the Food Category, supersedes the Personal Care Category for the first time, in relation to the most use of technology. The margin is not large however but demonstrates that the number of young business owners within the category are more active in the fast food business than in other sectors.

Figure 19: Deep analysis of under 35 Age Group

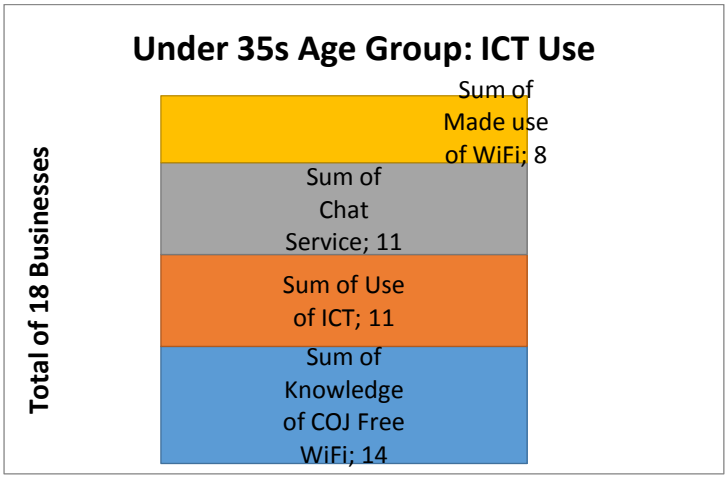


Figure 20: Under 35 Age Group: Business Category Analysis

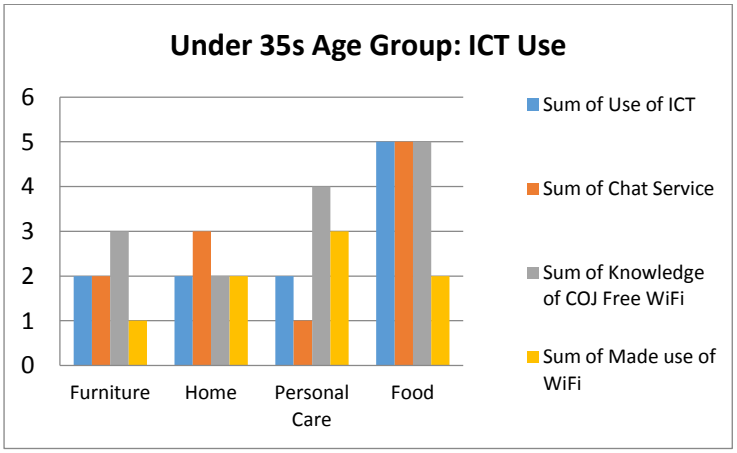
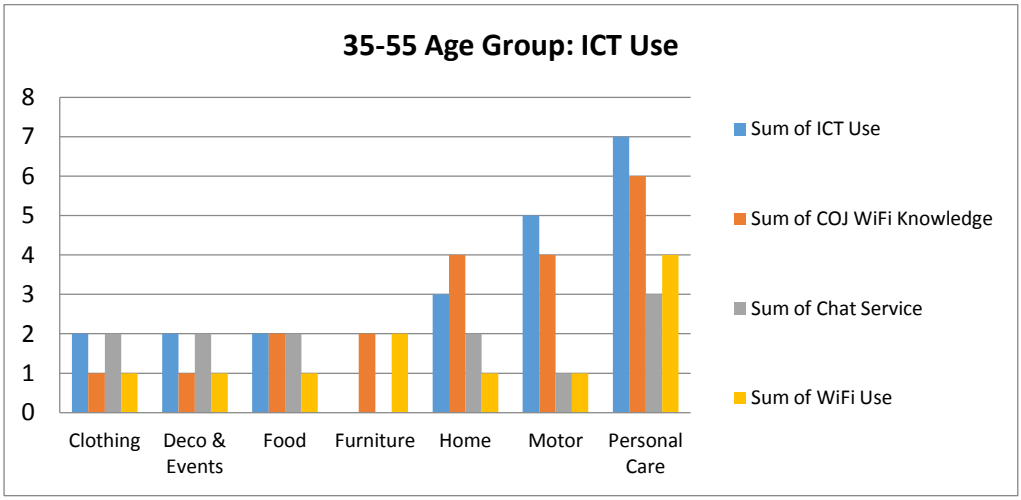


Figure 21 below demonstrates the performance of businesses within the various categories, for those aged 35-55. Within this age group, businesses in the Personal Care Category record the most activity in terms of their use of technology, their knowledge of COJ WiFi network and the use thereof. The motor category records the second largest usage and knowledge of the COJ WiFi Programme but reflects very limited use of WiFi. Within this cohort, only a handful of businesses makes use of chat services like WhatsApp, where only one business owner in the personal category for instance, making use of this communication tool.

Figure 21: Deep Analysis 35-55 Age Group Business Categories



4.8.2 Fifty Five (55) & Above

The fifty-five and older age group only has a total of six businesses across the seven categories. As a result there is very little to read from the group, except that one business in each of the motor, food, furniture and events and deco categories indicated knowledge of the COJ WiFi. Three of these businesses had in turn made use of the COJ WiFi.

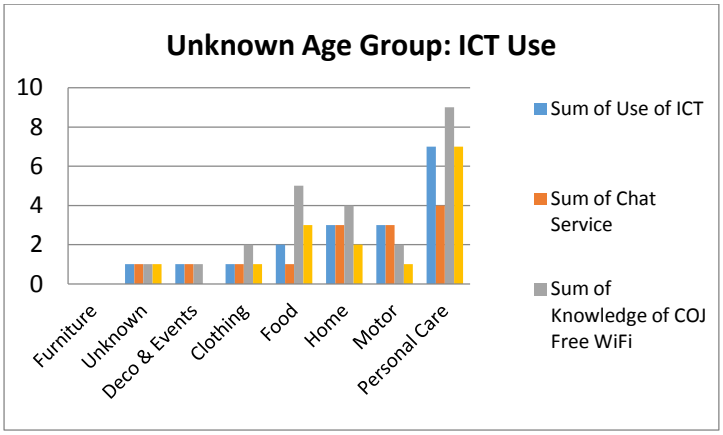
4.8.3 Unknown Age Group

The group is made up of individuals whose age information is not captured by iTea, for various reasons such as lack of trust on the part of business owners. Whilst iTea indicate

that they insist on business owners being of a minimum age, of eighteen years, they do not insist on compelling businesses to submit their age.

From the sum of thirty businesses under this age group, the personal care category recorded the highest number of businesses at eleven, followed by the food and home categories with six businesses each. The remaining businesses belong in the motor, clothing and furniture categories, with three, two and one businesses each, respectively. Similarly, the use of ICT follows a similar trend across the categories, recorded at eighteen across the board (60%). The number of businesses that know of the COJ WiFi jumped slightly higher to 24 businesses, which equates to eighty percent (80%) within the group. In terms of usage of the COJ WiFi, the unknown group recorded fifty percentage (50%) businesses that have made use of the technology.

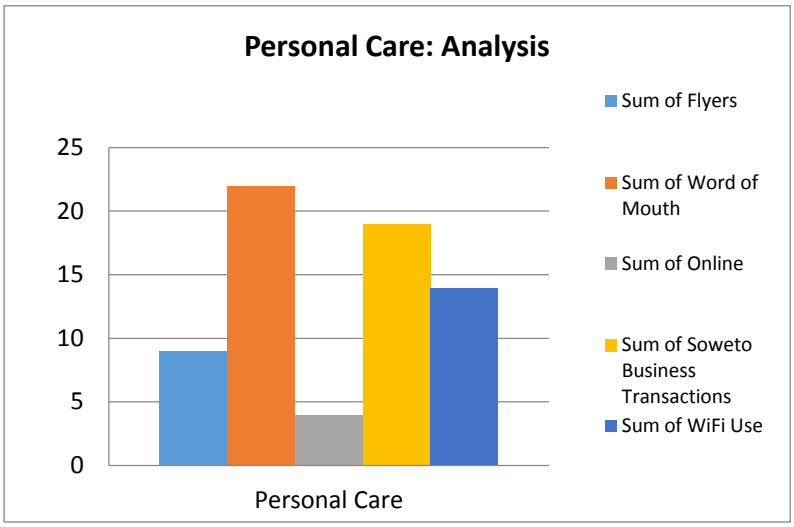
Figure 22: Deep Analysis of Unknown Age Group



The Personal Care Category was then isolated and observed in greater detail. The business category has the most number of users and recorded the highest use in relation to ICTs, Soweto to Soweto Business connections and other areas. Figure 23 below helps to demonstrate the various outcomes measured under Personal Care. Businesses in the category evidently rely on Word of Mouth as a means of communicating and advertising their businesses. Whislt there is strong presence of Flyers as a means of getting their business out there, this median enjoys 50% less use than Word of Mouth. Online functionalities such as email, websites etc. are not utilised extensively for business activity,

with ony four businesses making use of this technology. Contrast that with the number of businesses that make use of WiFi technology, WiFi enjoys three times that of online usage. There is clearly a disjuncture between what is technology for business and what WiFi is perceived to achieve. Put differntly, there seems to be a misunderstanding on the part of small businesses on the value of WiFi as an economic development tool.

Figure 23: In-depth analysis on Personal Care



4.9 Conclusions

There is consensus amongst businesses interviewed that access to clients is the single most important factor in the survivial of their businesses. Without a constant set of clients and new markets and clients, there is little chance of business survival. The iTea team has helped provide some insights into the small business ecosystems in the township of Soweto, with a specific focus on how technology is utilised by businesses registered on the TEA website. The results of the research were shared with the iTea Team. The interactions with the team were useful in reflecting and consolidating the outcomes into a summary of Soweto business activities and to identify key issues emerging from the relationship of ICTs and economic development.

The handset features strongly as a business tool, used extensively across a range of communication platforms such as the Whatsapp Chat Service and Social media. WhatsApp was identified as the most widely used communication tool followed in close second by Facebook as the most widely used form of social media.

The level of ICT usage amongst township businesses

Outcomes of questions related to the use of ICTs for business activities was a mixed bag of positive observations and questions for further exploration. A large number of businesses reflected using technology for their business. The ICTs one would expect most businesses to rely on, such as email and Google, featured very lowly however. Facebook and WhatsApp on the other hand, are the most used ICTs for businesses. Both these ICTs fall into the category of Apps, which have emerged as the most ubiquitous communications platforms for people all over the world. Although these tools both use data, they are so omnipresent that they have evolved into part of everyday communications. Facebook has a penetration of 23% within the South African Market with users estimated at 14 million in 2016 (Internet World Stats 2017). WhatsApp on the other hand enjoys just as much popularity with the App topping the list of free downloads from all the app stores in South Africa (World Wide Worx 2016).

Business to Consumer Connections

The use of technology, whilst it is extremely pervasive has not replaced the human contact that businesses enjoy across the ecosystem. Word of mouth was identified by almost all businesses as the primary form of contact with not just their existing clients but with businesses they transact with as well. More importantly, businesses still rely on word of mouth as a form of marketing to new markets and clients. An important observation was the number of business transactions that happen between businesses in Soweto. Close to 70% of businesses interviewed indicated that they do transact locally with other businesses. This is particularly important in advancing a conversation around potential economies of scale or the circulation of money within the township, as advocated by iTea.

Businesses that transact outside of Soweto point mainly to the absence of such services or products from within the township as the primary reasons for sourcing outside of their locations. The number of businesses that transact out of Soweto are recorded at 81% of total businesses, an extremely high number of transactions taking place outside of the township. This supports the view that township economies are still ancillary to the economic activities of the city of Johannesburg's business districts. Soweto is still largely a reservoir of labour for the city's economic nodes. There is clearly opportunity to introduce economic activities in a place like Soweto to support the creation of a more self-sustaining ecosystem.

City of Johannesburg Business Support

Only 38% of businesses said they knew of the City of Johannesburg's business support programmes, whilst 11% of businesses said they had very good knowledge of the city's offering and had received some form of intervention from the regional hubs. This is a worrying figure, given that the support interventions have been institutionalised since 2008 in the City of Johannesburg and an SMME Hub was launched in August of 2015 within Soweto. There is clearly a misalignment of business needs and city strategic orientation towards business support. This is particularly worrying given that the City of Johannesburg specifically identifies Small and Micro Enterprises (SMME) as central in the economy of the city and a key business cluster to nurture in achieving inclusive economic growth/development.

Is the value of WiFi missed?

This question arises from the perception observed of businesses that WiFi is not a tool for business purposes. There does not seem to be a clear enough understanding amongst businesses that the technology exists for social media communication and entertainment free of charge and it would build economic benefits in that it can offset communication costs. The City of Johannesburg has implemented the Digital Ambassadors Programme and boasts figures of over 370 000 residents trained to utilise online services and able to connect to the city WiFi (January 2017 statistics). The services accessed on the Maru A Jozi

Cloud portal include transportation, work, general information, banking, voice over internet calling, emergency, voucher deals and education (COJ 2017). The concern here is that the training appears to be generic and touches on a number of features. Once a session ends, the potential user is most likely not going to interact with the digital ambassador again. There is not online or cellphone contact to assist users with related information. There is also no criteria used by the Digital Ambassadors as to whom is targeted within a community, which may distort the true value of the reported number of individuals trained.

Reception of TEA Innovation by Businesses

The majority of businesses (53%) pointed out to failure on the part of the TEA Platform such as the website being down, experiencing problems with the login process. Many indicated that they never received registration details after they signed up onto the platform.

The next group of businesses did not perceive value in making use of TEA and thus did not bother making use of the technology. This group represents 18% of the total businesses. iTea's response to the disappointingly low take of their technology was of course met with some level of disappointment although they expressed an expectation of the low user numbers. They reflected on the first phase of the project as a learning experience more than anything else (iTea 2017).

More importantly however the group reflected on the importance of not throwing technology at users and expecting them to embrace it fully. Whilst they felt that they are providing a well-intentioned intervention, they also understand the environment within which the technology is being deployed. Many of the businesses are not tech-savvy and in fact some are fearful of technology. iTea reflect on their objective of handholding businesses until the value of technology is realised by all citizens. It is worth pointing out that almost all businesses responded positively when asked if they wanted training on the use of TEA aimed at improving weaknesses they identified in the businesses. This however is in the context of limited dependence upon technology as a means of communication by the businesses. Traditional communication median such as word of mouth, face to face engagements and to a large extent telephones are more dominant and preferred means of

communication amongst businesses. The philosophical underpinnings of the TEA platform are relevant and present opportunities to achieve some of the global concerns of digital exclusion and economic marginalisation as it affects most South Africans and residents of Johannesburg. Is there a case for more TEA?

Chapter 5: ICT4D: Planning Solutions for Joburg

5.1 Introduction

In the second chapter, the CMDS economic schools of contextualised the structuring elements for a discourse on technologies and how these have influenced and continue to shape economic development. Most important amongst the variety of lessons learnt is the fusion of human development and technological advancements under an umbrella term of ICT4D. Information and communications technologies are synonymous with development and global discourse favours this combination as the future of development, particularly in light of the increasingly connected world. The combination of the two streams, development and ICTs, present boundless convergence for the rapidly urbanising and rapidly connecting African continent. Thirty years ago, very little could have been predicted on just how much ICTs would have transformed global economics, culture and obviously communications. Writing in 1993, Castells speaks of the information revolution sweeping across the world, where the power in technological advances, fibre optic cables, communication satellites and the internet are all transforming urban spaces and communities in ways partially understood. In light of the exponential developments and innovations taking place in present day, what we think we know about the future of cities is not certain. What we do know however is that the role of ICTs in the development process is a bubbling issue and will continue to dominate discourse amongst the world's most influential global institutions, academics and nation states. We ought to shape how planners are planning in this context.

The previous chapter on the journey of iTea, a start-up tech company operating in Soweto, Johannesburg, gave us insight into the world of innovators, their technology and how Soweto Businesses receive technological innovations. It also opened a window into the attitudes of individuals towards technology and provided important insight into how people perceive government's interventions and support programmes. These insights are specifically from a business community point of view, presenting specific clues on how this

important group of small and emerging businesses/entrepreneurs perceive the efforts of the state in helping them build successful enterprises. Secondly, small businesses were interrogated on the perception to start-ups whose cision is driven by technology. How do thet perceive such? There were very clear gaps identified in the ecosystem within which small business operates.

Chapter 5, Information and Communications Technologies 4 Development [Planning], is an opportunity to explore the planning responses needed to harness the potential opportunities presented by ICT4D and innovations pioneered by the tech start-up generation. Essentially this is an exploration of the ecosystems needed to model Johannesburg's future development, using the experiences of iTea and the solutions their innovation proposes. The lessons learnt in this exercise can assist South Africa's urban areas comprehend and plan accordingly for some of the development challenges that South African cities face. The chapter commences with an overview of South Africa and Soweto, paying particular focus to the socio-economic challenges that continue to hamper the township. The mechanics of the five pillars of an ICT4D ecosystem are fleshed out, weaving these with planning principles and potential solutions to Soweto's challenges. The chapter concludes with a summary of lessons learnt and recommendations for development planning.

5.1.1 Socio-Economic Profile of South Africa

The most critical observation about the state of South Africa's socio-economic profile comes from the country's twenty year overview into democracy (1994-2014). In this period, the gross national income per capita has increased from R12 504 in 1994 to R60 505 in 2013. The education levels of South Africans have improved somewhat over the same period, whereas in 1994, 8% of working population did not have formal education, 36% held a matric or more and only 5% held a university qualification. By 2013, the workforce comprised of 2% of people without education and the share of those with Matric or more

had increased to 52% and university graduates had risen to 12% of the working population (RSA Government 2014).

Only 39.8% of working-age adults had a job in 1994 and this improved to 43.3% in 2013. Unemployment amongst the youth rose from 30% in 1994 to 40% in 2013, whilst the number of unemployed youth had doubled from 1.3 million to 2.6 million in the same period.

In relation to small business activity, where entrepreneurs are made, South Africa comes from an era of systematic marginalisation and exclusion of the black population from participation in economic activities such as starting their own businesses. "The result was, on the one hand, inadequate market institutions and infrastructure to support emerging producers, and, on the other, a widespread lack of experience in starting and running enterprises" (RSA Government 2014:97). The report states that the democratic government has implemented various approaches to supporting SMMEs such as credit facilities, establishing support and extension agencies and incubators and diversifying procurement towards emerging enterprises. Despite these interventions however, South African small business is still struggling. For instance, the 2009 Global Entrepreneurship Monitor Report ranked South Africa 15th out of 37 countries for start-up activity and 29th in new firm activity; essentially ranking South Africa in the lowest quartile of all involved countries, in two areas of opportunity entrepreneurship and new firm activity. "Total early-stage entrepreneurial activity is particularly low-about half that of other developing countries. Going forward, the report acknowledges the need for continued focus on improving mentoring and other support programmes for small businesses, as well as reducing the regulatory burden that hampers small businesses growth"(RSA Government 2014:98).

5.1.2 Socio-Economic Profile of Soweto

Soweto, the largest township in South Africa has a population of around 1.4 million people, making it home to an estimated 43% of the city's population (COJ 2016). In a 2003 report on the economic performance of Soweto, the city of Johannesburg estimated that some 80% of Soweto's disposable income was spent outside of the township (Harrison and Harrison,

2014). This high degree of leakage resulting in very low internal circulation of money, and therefore a very small multiplier effect (COJ (2003) cited in Harrison and Harrison 2014). Since 1994, extensive investment has been made by the public sector into a number of initiatives into Soweto, lifting the level of economic infrastructure and public amenities. Significant amounts of investment has also gone into the upgrading of basic infrastructure for the residents of Soweto who have endured decades of neglect by the Apartheid government. A significant amount of investment has also gone into Soweto from the private sector, most of which has tapped into the consumer market through the introduction of malls into Soweto. Trade restrictions governing the types of businesses that black people could own were lifted in the 1970s, allowed Soweto to undergo an economic resurgence that saw a varied mixture of business activity from the typical shebeens, Spaza shops. "Within five years Soweto's landscape changed as new grocery shops, dry cleaners, liquor stores, service stations and fast-food outlets were erected throughout the township"(Brodie, 2008:268). A number of neighbourhood shopping centres were developed in the 1980s around the township but it was only post 1994 that mall developed in Soweto, with the Dobsonville Mall in 1994, Protea Gardens and Bara Mall in 2005, Jabulani Mall in 2006, Maponya Mall in 2007 (ibid). This has reinforced the perception that Soweto consists of a 'consumer citizenship' (Harrison and Harrison 2014).

Post-apartheid Soweto development has not transformed the fact that Soweto does not have an economic base of its own (Harrison and Harrison 2014); instead it continues to act as a labour reservoir in support of adjoining economic nodes such the Central Business District of Johannesburg and other economic centres in the city. The City of Johannesburg estimates the Gross Value Add of Soweto at less than 5% of the economy of the city (COJ 2016). For a region carrying over 40% of the city population this is an overwhelming anomaly. ICTs and their diffusion is another means to measure the levels of development.

5.1.3 ICT prevalence in SA

Internet availability in Africa is recorded at 27% penetration, the lowest ranking across world regions with Asia penetration recorded at 47%, the second lowest ranked region (Internet World Stats 2017). Africa accounts for 9.3% of Internet users globally. Africa's internet use growth rate between the year 2000 and 2017 however is recorded at 7 557% growth, the highest growth region in the world! Similar trends can be picked up on penetration and use of Facebook, which enjoys usage of less than 10% in comparison to the rest of the world. South Africa's Facebook usage as of June 2016 was estimated at 14million users, representing a 25.3% penetration rate (Internet World Stats 2017).

Abrahams and Goldstuck (2012) reflect on South Africa as being an attractive destination for the mobile middle class and for people working in service industries across the continent, post democracy in 1994. They also relate the exponential growth of South Africa's mobile communications revolution to the increase of migrant workers who come into the country and need to communicate with the outside world. This is particularly the case for a migrant rich city like Johannesburg, which attracts urbanisation from within the country as well as Africa's economic migrants (ibid).

5.2 Towards a Development Theory

In an equally eloquent manner, as she speaks of freedom, Sen (1999) unfreedom and the various ways in which people can be disenfranchised as a result of what they are subjected to. Access to basic services, sanitation, electricity, water and increasingly digital access, are examples of elements that determine the level of freedom people enjoy. The White Paper on Local Government (1998) is the cornerstone of local authorities in South Africa and enjoins a developmental spirit of local governance from all municipalities. It defines developmental local government as a set of four interrelated characteristics: maximising social development and economic growth; Integrating and coordinating; Democratising development; and Leading and learning (RSA Government 1998). These characteristics are vital and will ensure that the planning responses or recommendations are locally grounded

and relevant to South African challenges. There are a range of planning responses we can draw from to inform the kind of city and country that a developmental state ought to be; driven through the collaborative efforts of planners and the communities they serve.

5.2.1 Collaborative Voices

Patsy Healey (1997) takes a synoptic view of three strands of traditions planning thought throughout history; policy analysis and planning, physical development planning and economic planning. She draws out the various influences over economic planning, such as centralised planning that emerged in response to Marx's critique of the capitalist system and its onslaught on human dignity; and the emergence of 'self-governance' ideas that emerged from critique of the bureaucratic organisation for compromising the freedom of individuals and communities to determine the conditions of their own existence. Likewise through an analysis of physical development planning and policy analysis and planning, (Healey, 1997) points out that planners realised the need to balance social concerns with physical planning. through these critiques and rethinking that planning underwent, there is realisation that planning is about choices. Healey states that policy planners cannot be value-free and must accept their judgements to be value-laden.

Campbell (2002) affirms the inherent value judgements associated with planners as they are caught up with making choices and distinctions about good and bad, better and worse and so forth. Healey (1998) and Campbell (2002) contends that acknowledgement by planners of their inherent bias or value system is in fact helpful for planners as it allows them to advocate for specific groupings in society. 'Actions cannot be value-free, so rather than hiding, implying or sidestepping such concerns, explicit consideration needs to be given to the nature of the ethical values that our processes and outcomes are seeking to promote'(Campbell 2002, 274). The underlying values of the planning responses to follow are thus not value-free! They are biased towards the interests of the poor and marginalised, or more specifically towards the interests of emerging businesses and latent entrepreneurs in Soweto and all other townships so that their issues may be heard and potential realised.

5.3 ICT4D: Planning solutions for Soweto, Johannesburg

An important outcome of the second chapter are the five principles of ICT4D as synthesised by Spencer and Smith (2010). These are Human Development; Innovation; Universal Access and Connectivity; Economic and Social Services; and Openness in All Layers of Society. These are the mechanics of each of these pillars, tied with the planning principles in support of these and the practical ways in which TEA solutions can assist build confidence for Soweto businesses. How do we build a planning response, using these tools and what we have learnt about the economic environment of Soweto businesses?

5.3.1 Human Development

Human development has become a reoccurring theme throughout the research report and is arguably the most vital of the five pillars to be discussed under ICT4D. Developed from Sen's (1993) Capability approach, (Smith and Spencer 2010) define human development as an increase of attention to individual, external, and group capabilities and freedoms, regarding these as highest-level development objectives. It is about individual's behaviours and how they experience themselves within the environment they find themselves. Sen (1999) contends that economic growth cannot be treated as an ends in itself but it ought to be concerned with enhancing the lives we lead and the freedoms we enjoy. The capability approach advances combinations of economic development, social justice, and social choice (Spencer and Smith, 2010).

In relation to the four pillars of Developmental Local Government, human development is tied most closely with **Democratising development, empowering and redistributing**: In this regard, local government is expected to play more than just a regulatory function by supplementing this with leadership, encouragement and practical support to individual and community initiatives (RSA Government 1998). Equally, local government must not allow participatory processes to become obstacles to development with narrow interest groups capturing the development process (ibid). The entrepreneur

One of the elements of a communicative theory, as derived from Healey (1998) is the recognition that, in contemporary life, people have diverse interests and expectations. Planners ought to thus acknowledge the diversity prevalent in all social groupings that they plan with, so that the primary objective is collaboration towards decision making. Hanna (2012) points to the potential of a 'second generation' development that emphasises an informed, inclusive and participatory development using ICTs. Planners need to be very deliberate in their interventions and play more of an advocacy role as advanced by (Davidoff 1965) to stem the growing polarisation of interests of those who do not have means. This is in relation to ICTs is particularly vital and averts the learning economy from causing further marginalisation to those who are weak (Lundvall 1996).

The human capital approach will help unpack the limitations to the involvement of township residents in the planning process and also guide in how their involvement can be built. Given the socio-economic profile of most townships, such as the low literacy rates recorded amongst Sowetan residents (Stats SA 2012, City of Johannesburg 2012), the success of innovations is dependent on the capability of the recipient community. Through the use of empirical evidence, Hausman (2005) draws a correlation between human capital and its effect on innovation. His findings reveal that USA innovative firms are led by more educated executives and similarly educated owners of businesses in Ghana, are more prone to innovation than their less educated counterparts.

TEA proposes a 'hand-holding' approach to the development challenges facing the business community of Soweto. At the core of their idea is to see more businesses in the township thriving and attracting more customers. TEA believe that their situated proximity to the problems faced by small businesses given them latitude to develop a flexible product that responds to the needs of Soweto's business community. The solutions presented by TEA will empower the business community and also ensure right steps are being taken towards the redistribution of resources to the previously disadvantaged community of Soweto. The iTea team feel that because the idea is not motivated by money may be a hindrance to them

obtaining financial backing from private sector institutions. This is where government fits in, as stipulated under developmental local government objectives: Government is encouraged to lend leadership, encouragement and practical support to individuals and communities.

5.3.2 Connectivity and Universal Access

Put simplistically, connectivity is the basis on which all the potential benefits and costs of ICTs rest (Spencer and Smith 2010). This pillar relates to the physical component of the ICT4D ecosystem, the handsets, broadband, WiFi, costs associated to network operators or the cost of data. The desired outcome of this pillar is not merely to connect people for the sake of connecting them but to advance e-development (Abrahams and Goldstuck 2012). 'The concept of e-development is used here to signify a time in which societies advance due to the socio-economic effects of very rapid information flows, and development is enhanced through the integration of digital information and communications technologies in the economy and everyday life' (Abrahams and Goldstuck, 2012:109).

There are two glaring challenges linked to this ICT4D pillar. The first relates to the levels to which people all over the world enjoy access to ICTs. Spencer and Smith (2010) acknowledge that while connectivity has increased over the years with the rise of the mobile handset, unfortunately too many people still remain on the edges of technology as they do not have access to handset phones. More so, universal broadband connectivity remains elusive to many people, even where the penetration of mobile phones is extensive. Abrahams and Goldstuck (2012) make the point that digital inclusion and exclusion operate side-by-side negatively affecting e-development. They also foresee a situation where South Africa's population will take until 2020 for 50% of the population to be online (ibid).

Secondly, Matzat and Sadowski (2011), make the case that simply providing internet access to everyone will not automatically result in the use of the technology by the recipient community. They dispel the long held assumption of the 1990s that internet connections automatically led to equality of opportunity. In fact (Schwab, 2016) warns that while

technology offers latitude to propel developing countries and achieve economic development amongst its marginalised communities, there is real danger of ICT creating new forms of marginalisation, digital marginalisation.

Avgerou (1998) suggests that in order for the potential of information technology to lead to economic growth, the development of appropriate organisational and social structures capable of exploiting the technological potential must be built. The Developmental Local Government principle in this instance is **Maximising social development and economic growth.** This entails government implementing the right steps to ensure that overall economic and social conditions of the locality are conducive for economic development. The City of Johannesburg has gone some way in investment in ICTs and programmes linked to the Smart City concept. However, as pointed out in the second chapter, the City's Digital Ambassadors Programme is but a small step in the right direction of ensuring the use of the technology. In fact the roll out of the programme appears to have missed the trick in defining the right target market for skills training. Instead of targeting random individuals in the streets, the programme could be tailored to businesses and create appetite around the potential of connectivity helping businesses attract greater client numbers and other business services that are made easier through technology.

TEA are of the same view as Matzat and Sadowski (2011) that there is real danger of throwing technology at a problem not yielding the desired outcomes. The broadband is made available to the people of Johannesburg, even within Soweto yet the true value of the connectivity has not been felt by the small business community, an important group of economic stakeholders in the views of the City of Johannesburg (2016). In fact, the danger is that the small business community lags behind the technology curve and suffers more decline as services and interactions between consumers and service providers becomes increasingly digital.

TEA reflect on their product as a technology response to the spider-web doctrine advocated by Onyeani (2000) in that TEA seeks to harness and trap the economic activity within

townships. The iTea team speak of the possibility of building economies of scale amongst the small township businesses by solidifying their relations online and building trust between like-minded businesses. The various platforms available on TEA are designed to push businesses towards collaboration and seeking services and products amongst their business peers before looking outside of Soweto for services, likewise with their consumers.

5.3.3 Economic and Social Services

This pillar emerges from the plethora of services that have emerged throughout the globe demonstrating value for those at the bottom of the pyramid or the marginalised members of society. Spencer and Smith (2010) point to a few areas as examples of the services that have emerged in the ICT sector

- Finance
- M-banking
- Distribution—primary producers connecting directly with markets, reduced distribution margins, and buyer oligopoly
- Employment and income—drivers and casual workers getting jobs by phone and improving their own efficiency
- Personal advancement—managing security, childcare, and home services
- Public services—tele-health, distance education, and many other e-government services (Spencer and Smith, 2010:12)

Although it is important to develop technology or products to be used by those at the bottom of the pyramid, these may not necessarily enjoy usage by recipient communities. The WEF (2016) makes use of research data from India and Brazil to identify four areas as barriers to greater internet usage: infrastructure; affordability; skills, awareness and cultural acceptance; and local adoption and use. Local adoption results from a lack of local content.

Reflecting on the increasing premium placed on the value of knowledge within the knowledge economy. Kleine and Unwin (2009), concede that more research is needed to establish what the information and communications needs of the poor are and how they can be best met.

Van Dijk (2005) summarizes different concepts of digital and media literacy leading to a more sophisticated understanding of digital divide and the focus of digital skills. He understands digital skills as the "set of skills that users need to operate computers and their networks, to search and select information, and the ability to use them for the fulfilment of one's goals" (Van Dijk, cited in Hausman 2005:73). As we progress into the information age, it is critical that human capital formation becomes a critical element of the development discourse, particularly in South Africa and its townships. Livingston (2012), Lundvall (1996) and Alias (2015) contend that a variation of skills sets are required to meet the type of economy that is being run by rapidly developing country.

In relation to local content, a number of authors affirm the importance of developing local content, derived from and in collaboration with local communities (Abrahams and Goldstuck 2012, Reynolds and Stryszowski 2013, OECD 2014). More specifically, Reynolds and Stryszowski (2013) believe that local is the future of ICTs and is defined as being 'an expression and communication of a community's locally generated, owned and adapted knowledge and experience that is relevant to the community's situation. Local content is thus content available in the local or community's language and can range from data collection to the development of videos (e.g. on YouTube), or informational sources in forms of blogs, Wikipedia, or informational articles' (Reynolds and Stryszowski, 2013:4)

Integrating and coordinating in accordance to developmental local government requires local government to integrate and synergise the viewpoints of often divergent role players towards a common purpose.

- Within any local area many different agencies contribute to development, including national and provincial departments, parastatals, trade unions, community groups and private sector institutions. Developmental local government must provide a vision and leadership for all those who have a role to play in achieving local prosperity.
- One of the most important methods for achieving greater coordination and integration is integrated development planning.

Local content is perhaps the most widely spoken of concept from the various authors above. The iTea Team have built their own database of bases from their interactions and one on one engagements with local businesses. The businesses are captured, including their geographical location, contact details and services provided. The businesses are classified in term of categories that represent the business activity on the ground. Consumers who make use of businesses are able to interact with businesses online, including rating the businesses. This is creating of local content, by local businesses, residents and any other individuals who may make use of the technology.

Most importantly in terms a product offering, TEA have developed the technology and tailored it to the needs and comments of business and individuals they have interacted with. This is particularly relevant in relation to product sustainability and relevance for the intended users. TEA also lends its product for use in the physical planning undertaken by government. One of the team's value proposition is the intelligence that the data derived from the product can contribute to the planning function in the department. It can assist with the plotting of organic business development, tracking the existence of illegal land uses and do trend analysis, gain insight on the type of businesses emerging in the township and also observe areas of intervention as the local municipality.

5.3.4 Openness in all layers of society

This pillar relates to the larger movement that pushes for openness in all layers of society: social, economic, legal, and technological (infrastructure, software/ logic, content) (Spencer and Smith 2010). This is clearly in keeping with the idea of a knowledge economy, which is founded on principles of citizens having access to knowledge whenever they please. A concept that Archibugi and Simonetti (1998) refer to as the non-rivalrous nature of knowledge, meaning it cannot be prevented from the next person and it is perceived as a public good.

Spencer and Smith (2010) see a universal spread towards openness, from developing to developed economies; through a range of platforms such as open source software, open government, open educational resources, open standards, and open access to journals, books, and media. 'Both ideology and ICTs have been major drivers in all these developments, making it possible to communicate, organize, produce, and consume more widely and collaboratively, and making “closedness” increasingly more difficult to sustain' (Smith & Elder, 2010 cited in Heeks, 2010).

In relation to developmental local government, this again relates to **Democratising development, empowering and redistributing.** In this instance, the White Paper on Local Government sees municipalities building social conditions favourable to development through 'Ensuring that knowledge and information are acquired and managed in a way that promotes continuous learning, and which anyone can access easily and quickly' (RSA Government 1998). Knowledge is power and it is a non-rivalrous commodity that must be shared. Healey (1998) speaks to the fact that all forms of knowledge are socially constructed. Furthermore, individuals do not arrive at their preferences independently, but learn about their views in social contexts and through interactions.

The practical effect of the internet is to increase knowledge, access to information, the power of the informed consumers and citizens, and the transparency and effectiveness of decision-making. Therefore planners and practitioners ought to open up knowledge platforms and allow knowledge flows so that communities have access to knowledge that in-turn empowers them in the decision-making of development. It is hard to know how to quantify these effects...but does not diminish their importance (Spence, cited in Hanna, 2012:6)'.

It has been established that in a knowledge economy, information and knowledge are key determinant on the success of a region or a country. Data Driven Development requires a multitude of data sources to help governments, planners and businesses make informed

decisions. TEA opens up access to knowledge through the provision of an interactive platform that generates real-time information on the location of business activities, data analytics and so forth. The TEA platform also serves the interest of entrepreneurs looking to get into the market. As reflected by Hanna and Knight (2012) ICT enabled development draws on widely distributed information and communication to support grassroots innovation and collaboration. This is a spill-over feature that can arise from TEA, simply through a number of entrepreneurs in the same ICT space developing related businesses related or different to TEA. The diffusion of technology is not only through an act of replication with a multitude of individuals but can take shape organically through societal influences, copying and certainly word of mouth.

5.3.5 Innovation

The fifth pillar is one of innovation, increasingly regarded as fundamental to development (Spencer and Smith 2010). The body of this research has illustrated the clear linkages between innovation and development. ICTs, among other things, are the carriers of technological knowledge and the links that connect the essential elements of a national innovation system: the national institutions, their incentive structures and their competencies, that determine the rate and direction of technological learning (or the volume and composition of change generating activities) in a country (Spencer and Smith, 2010:14).

Developmental local government is mandated with **Leading and learning.** It is also acknowledged that the immensely rapid changes at the global, regional, national and local levels are forcing local communities to rethink the way they are organised and governed.' All over the world communities must find new ways to sustain their economies, build their societies, protect their environments, improve personal safety (in particular for women) and eliminate poverty' (RSA Government 1998). This point planners to the realities of a globalised world where the rapid flow of knowledge brings both opportunities and challenges to cities. In introducing changes to the townships of South Africa, Kururi-Sebina

(2014) suggests that our encounters with townships and dealing with the challenges we seek to resolve, must not only be physical but must also consider the relative inclusion or exclusion in the systematic processes of production and innovation. This means that solutions to the economic challenges must actively seek the involvement of township residents in the building of such solutions.

The relevance of mobile phones is not only in the connectivity it creates amongst individuals but has been acknowledged as a new platform of exchange that offers the potential of enhancing economic and social development (Reynolds and Stryszowski, 2013). Again, TEA is an innovation that present a variety of opportunities to the small business community it serves. More specifically, TEA aims to address the problem of spending-power exiting the township of Soweto by fostering social formations that the innovation seeks to address. Gegreeyesus (2012) affirms the view that innovation is essential for medium and small enterprises (MSEs) to become and remain competitive, move to higher return activities, and grow and graduate to small and medium-sized enterprise status, and also creating employment opportunities. Accordingly, governments and donors in developing countries have shown increasing interest in promoting innovation and entrepreneurship (ibid).

According to Archibugi and Simonetti (1998), an innovation can be monitored by subjecting it to these five questions. This will help explain the true value of the degree of innovation that TEA presents to the community to aims to serve.

(1) What kind of innovation? This is an ICT innovation, introduced to enhance business activity

(2) Made by whom? The technology emerged from the community of Soweto in response to the situational environment of the tech start-up

(3) Used in which product? Business

(4) Used by whom? Businesses, consumers and potentially other role players in the ecosystem such as local government, academics and students, research institutions

(5) For which human benefit? Creating an environment for increased business activity in an area; building a culture of businesses making use of ICTs for businesses

5.4 Conclusion

ICT4D offers opportunities for the leapfrog development of developing nations. Taking advantage of the potential of convergence, governments of emerging economies are encouraged to harness the potential of their communities towards more distributive economic development. The fourth industrial revolution, which we are very much a part of, brings about planning challenges that mirror the challenges faced by planners in relation to globalisation. The changes brought about the intensified ICT revolution (Schwab 2016) may be so rapid that they overwhelm the planning exercise. In an environment of such flux and uncertainty, the issues planners must deal with can be somewhat likened to the contradictions and confrontations between modernity and postmodernism. Postmodernism emerged and a critique of modernism and saw modernistic thoughts as suppressive and oppressive of 'the other' instead of celebrating the complexity, ambiguity, incoherence and diversity of the world (Harrison 1995). Instead of searching for the universal, postmodernism emphasises the specificity's of place and history. This means context matters, always. So whilst there may be numerous solutions and planning responses flouted on how we ought to plan in this volatile state of flux, reality is that there are so many conflicting rationalities and planning needs to consider context of such environments (Watson 2003). This, more important, is understood to relate to the ability of thinking globally yet being locally relevant to context.

In his article on the arguments for and against planning, Klosterman (1985) part of these include an economic argument against planning on the basis that government regulation and planning are unnecessary and often stifle entrepreneurial initiative and impede innovation; He also observes that in an environment where governments are expected to

provide investment guidance based on accurate information, government is often incapable or provides incorrect information. Government must at all times be prepared to partner with the right institutions from all formations of society in order to maximise efficiency and enhance development.

TEA is by no means the only tech-start up operating in the space; there are most likely multitudes of small start-ups operating in the ICT space whose innovations can help build solutions to a variety of solutions to a range of development challenges facing society. The city has not made extensive use of its influence over the social and well-being of local communities. The stats of money leaving the community of Soweto (COJ 2003 cited in Harrison and Harrison) are glaringly alarming yet no specific policy seems to be directed at this anomaly.

Chapter 6: More TEA?

6.1 Introduction

This research emanates from an interest triggered by a participant tech start-up in the City of Johannesburg's Hack Jozi competition in 2015. The entrepreneurs presented a concept using ICTs to transform the lacklustre performance and high failure rate of small businesses operating in Soweto, Johannesburg. Using the experiences of the tech-start up (iTea), the research set out to understand the impact of the ICT innovation amongst businesses it was introduced to in Soweto, Johannesburg. This research explored the theoretical correlation between ICT Innovations and Economic Development, to uncover the extent to which ICTs influence and impact on economic development. More importantly it was to learn ways in which this positive correlation between ICTs and Economic Development can be harnessed in order to build a body of interventions or theory for the City of Johannesburg to implement in its development planning interventions, using the experience and lessons from TEA.

6.2 Persistent Challenges of Soweto

The legacy and ramifications of apartheid spatial planning are deeply entrenched in the urban landscapes of South African cities. More so in Soweto, which by its location in Johannesburg was the site of must experimentation by the apartheid government. Post 1994, Soweto has been similarly the centre of much experimentation and development by the democratic government. Harrison and Harrison (2014) point out two narratives that have emerged in Soweto, one advanced by the City of Johannesburg government which paints Soweto as a progressive, changing township that is attracting private sector investment. The other is of social injustices, painted by the likes of the Anti-Privatisation Forum and academics, who cast Soweto in a more negative and stagnant light.

Soweto's socio-economic profile is of concern as it lags the rest of the city, a persistent trend amongst all the city’s townships. Soweto's challenges remain both spatial and economic and the two come together to deliver much hardships for its people. Soweto has a

low economic base. The people of Soweto must travel from and to work, in the various economic centres that the township is physically separated from. Soweto is largely a dormitory town carrying 43% of the city's population but contributing a mere 4% of a city economy that is celebrated as the economic heartbeat of the continent.

6.4 Johannesburg's ICT driven Solutions

The City of Johannesburg considers itself as a smart city, as per its Broadband policy of 2009, with a number of programmes and interventions initiated over the past decade in support of the digital city concept. Having taken the inputs of various economic theorists, scholars and practitioners on the value of ICTs and the influence they have over development (Lundval, 1996, Hanna and Knight 2002, Schwab 2016) what can we draw from the City of Johannesburg's digital city stance? The World Economic Forum (2016) has conceptualised a Network Readiness Framework, which captures necessary elements of a model ecosystem and what each of these are intended to achieve. There are four broad focus areas of the framework, inclusive of the environment, usage, readiness and impact, as reflected in the attached diagram. The elements of this network readiness framework will be used to frame the concluding thoughts on the research report and the findings made in the study.

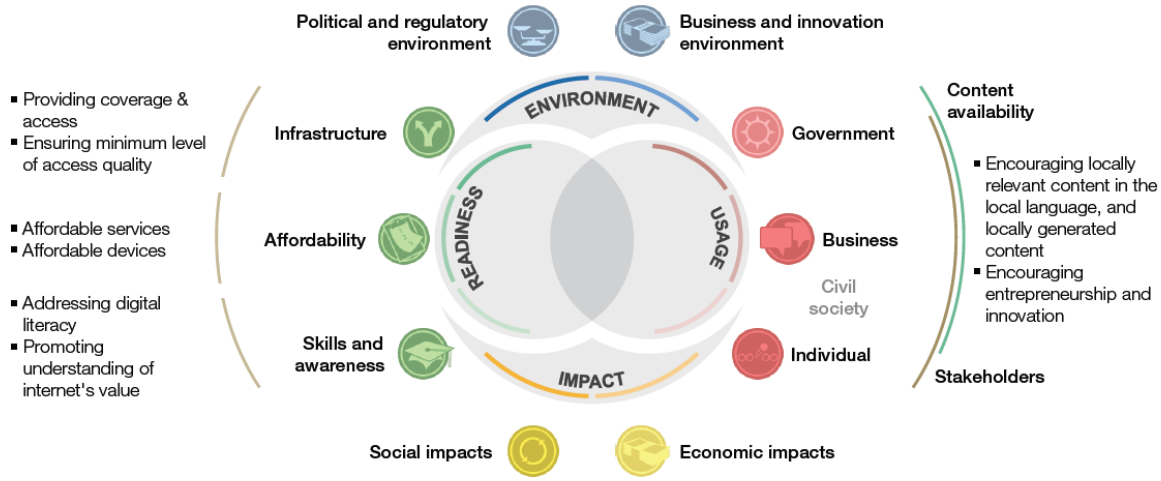


Diagram 1. Network Readiness Framework (Source: World Economic Forum 2016)

Measured against the network readiness framework as developed by the WEF (2016), there are clear areas where the City of Johannesburg performs well and there are areas of concern. The four areas being Environment, Readiness, Usage and Impact. In relation to the environment, starting off with the political and regulatory aspects, the City of Johannesburg is on the right course. South Africa's democratic programme is firmly in tact when we consider the developmental local government environment. Even though the COJ experienced political changes in the 2016 Local Government Elections, the core values of developmental local government are in place. The second strand of the environment speaks to the business and innovation environment. The #Hack.Jozi is a reflection of government intent and action towards creating a conducive environment for entrepreneurship to thrive.

The second of the four pillars of the framework is the readiness. This component refers to the infrastructure, affordability and skills and awareness created around the network. The showing of the COJ in this regard is not a good picture. Whilst the COJ has achieved a significant achievement in the roll out of a citywide network infrastructure, this has not resulted in ubiquitous accessibility of free WiFi services throughout the township of Soweto. The distribution of WiFi has been limited to the BRT trunk route and some public facilities. For a network built since 2009, this is extremely poor accessibility that has not gone the distance in terms of reducing the digital divide. Yes, some progress has been made insofar as the promotion of the internet through the Digital Interns, there is a clearly anomaly however in teaching end users on a product they cannot access readily.

In relation to usage, the section is divided into three, covering usage from the perspective of government, business and the individual. In terms of this section, the network framework advocates for the creation of local content, possibly in the local language and locally generated. Secondly, the framework calls for the encouragement of entrepreneurship and innovation. Indeed, the execution of the #Hack.Jozi Challenge is clearly an effort towards encouraging entrepreneurship, the effort has been criticised for its selective approach. Instead of cultivating every idea and opportunity presented to the COJ, in the elimination of

seven ideas out of a potential of ten, does not encourage the true value of the innovations received. A competition of this nature, in a developing country situation, ought to uncover as much talent and opportunities as possible. Similarly, the encouragement of local content is in fact discouraged through the selection of three ideas at the exclusion of ten. So whilst the efforts are noteworthy, they fall short of the role governments ought to play in an effort to build scale and extensive use of technologies and platforms created.

The last pillar of the network framework is the impact that the other three pillars can make. There are social as well as economic impacts that are potentially realisable from the extent to which the network framework provides latitude. There are a number of areas in relation to the other three pillars where the COJ has not performed optimally and so a clear conclusion can be drawn that the net impact on social and economic measures will not be optimal. There are clear areas of improvement that are needed in order for the network framework to yield the truly desired impact on society and economically. How would a start-up like iTea with their network platform fair as a response?

The body of literature on the concept of ICTs for Development (ICT4D) suggests a range of interventions, from a host of authors and institutions. Amongst them is the work of Spence and Smith (2010), who introduce five pillars to assist governments maximise the development potential of ICTs. These are Human Capital, Innovation, Universal Access and Connectivity, Social and Economic Features, and Openness at All layers of Society. Modelled on Sen's (1993) Capability approach, Smith and Spencer (2010) pay particular attention to the human development pillar, which advocates for more attention to individual, external, and group capabilities and freedoms. These objectives are elevated and regarded as highest-level development objectives.

The other pillars of ICT4D are critical to the success of a country or region's ecosystem. Economic and social issues relate to the level of local content that is developed into the ICTs. Without this, there is little relevance for the recipient community and this in a way can limit the entry and adoption and may even lead to failure of the project or intervention.

Innovation is a both a critical cultural and physical aspect for inclusion into the ICT4D ecosystem. The ecosystem must foster the emergence of innovation and have the necessary systems in place to nurture it when it does emerge. In an information and knowledge dominated environment, increasing access to information is advocated through openness at all layers of society pillar. Information is power. This statement is very much cliché and also very much a reflection of the value of access to information or knowledge. Governments need to function as open source institutions and foster such within the ecosystems they have influence over, so that citizens have equal access to opportunities in cities. Finally without connectivity and universal access, there is essentially no ICT4D even possible. This is one aspect that cities and ecosystems need as a foundation of all developments linked to ICTs.

6.5 ICT4D in Soweto; More TEA?

The work of iTea in harnessing the energy of small businesses operating in Soweto is an expression of the capabilities and freedoms approach: human capital. TEA is taking technology and using it to give small businesses a stronger footing and opportunity to build sustainable businesses. The technology introduced seeks to harness the collective of Soweto businesses and present them to the online community so that they may benefit from the increased traffic to their businesses. Technology is being used as tool to develop the potential of individuals and the collective and not merely seeing the provision of broadband provision as the end of the solution. This approach allays the warning of Matzat and Sadowski (2011) that the mere introduction of technology is not a complete solution.

Innovation: The interventions of the City of Johannesburg have gone some way in setting in motion a culture of innovation amongst the people of Johannesburg through its partnership with Wits University and private sector role players in the establishment of an ICT precinct in Braamfontein. The precinct has taken shape over a decade of investment and subsidiary projects such as the Hack.Jozi competition, which gave a platform to TEA amongst other innovations. The precinct is but one aspect, it speaks to the physical component of

innovation and the competitions and activities developed around the smart city concept are building up a culture.

Openness at all layers of society: Whilst the emergence of open source through large institutions such as Google have set the trend, the Johannesburg environment is not too far off the mark. The City of Johannesburg launched the Massive Open Online Varsity programme in 2015, which is a platform for free education of youth in the city in a number of skills and computer related courses. In 2015 the City of Johannesburg launched the Digital Ambassadors Programme, wherein residents were encouraged and trained on how to make use of the COJ Cloud Maru A Jozi (COJ 2016). The city launched its free WiFi in 2015, allowing communities to access the internet from a number of sites in and around the city, including libraries, clinics, schools and BRT stations (COJ 2015). This has not been without its constraints however with a number of challenges reported in the WiFi hotspots in recent months. The system has crashed, it is not always available and a host of other technical glitches that have been observed. Access to information is not always readily available too, such as an attempt to locate the physical location of WiFi hotspots in Soweto is not accessible from any municipal office. The accessibility of information or level of openness is an obvious area of further research.

Connectivity and Universal Access: This is achieved in the City of Johannesburg through the roll out of the Broadband Project and the free WiFi. However, the range of problems listed above illustrate that the project is not running smoothly. Linked to this is the lack of openness on the location of WiFi sites in an area like Soweto, which serves to severely constrain the very objective of building a connected society. Connectivity must be permitted in order for individuals to realise the true values of the system being promoted.

Economic and Social Services: As outlined in the introduction, Kenya and its host of ICT innovations, such as M-Pesa, i-Cow and M-Farm for instance, has evolved into one of the more progressive communities on the continent in relation to their innovations. The communities of Kenya enjoy local content, developed and promoted to serve the interest of

the local community. The HackJozi competition has been active for a period of three years, yet there has been no local content making waves in the country, or even locally! So whilst the culture of unearthing talent is being built, the culture of nurturing talent does not seem to be a priority. This is an anomaly and the WEF (2016) draws on empirical evidence to demonstrate that the lack of local content is a drawback on innovations.

6.3 Beyond rose-tinted viewpoints

In almost 23 years of democratic governance, we still sit with a problem where economic development and development planning interventions in the city have not been able to turn the dire situation around. “Twenty years after apartheid, we are talking about how to revitalise the township economy. The limited economic empowerment that took place during the past two decades has made barely a dent on the areas where most South Africans live.” (Makhaya, 2014 newspaper article). What are the real limitations for small business growth in Soweto? Harrison and Harrison (2014) challenge the state to 'move beyond its rose-tinted depiction of Soweto' and acknowledge that social and spatial inequalities remain across Soweto.

In her research on the systems of innovation within townships, Kururi-Sebina (2014) undertakes detailed studies of the interactions of small local businesses operating in the townships of Atteridgeville and Mamelodi, in Tshwane. In questioning the businesses on how they are received and supported by the local community, she makes some startling discoveries. Businesses feel that the community do not support their businesses for a number of reasons, inclusive of the following:

• narrow-mindedness (where people see the nominal cost of a good without factoring in the additional transportation cost they would incur by travelling to get it from further afield, so they would rather pay for transport than pay a slight premium for the same good locally);

• greed and jealousy (the individualism and values issues come up recurrently – several locals seem to believe that there are people who are deliberately out to only do things for

themselves in a desperate pursuit of wealth. This is sometimes even linked to the high incidence of burglary where there are claims that people will even steal your equipment just to sabotage your business); and

• a kind of mental slavery where "we'll buy if it's bo-van der Merwe!" (people don't mind buying if it's an outsider or a white person selling) but "...people don't want to buy from [other] black people – it is always 'ketla go bona'" (meaning asking for credit or favours). To the extent that there are successful entrepreneurs in the area, the claim is that "you have to be connected to succeed" (Karuri-Sebina, 2014:148).

These sentiments of inherent problems associated with black business are shared by other economic commentators and practitioners, including Makhanya (2016) stating that one need not have a sophisticated understanding of history to understand why black-run businesses struggle to make in their respective field. "It is shocking though to see them being marginalised in the everyday and the personal, by their own" (Makhanya 2016). The sentiment goes one step further in the viewpoint of Mazwai (2014) who believes that government has covered quite a distance in economic transformation, yet it appears that blacks do not meet it halfway. President Zuma (2014) takes an even more critical view of the problem at hand stating that "South Africans have become dependent on the state. Foreigners come to SA, see opportunities and thrive. People wait for government. They are not used to standing up and doing things. Hence foreigners have taken over the small businesses" (Zuma, 2014).

These are all real challenges that businesses face. The Marxist school of thought makes reference to the superstructure upon which all economies rest. Lamola (2013) pointed out that Marxism as a social hermeneutics refers to how humans as social beings understand, explain, model and transform their world and how they are conscious of how they are transformed and shaped by their world (chapter 2). This is to emphasise the importance of context and local issues as they impact on development. Theoretical or policy interventions devoid of such realities as pointed by Makhanya (2014,2016), Mazwai (2014) and others are incapable of truly solving the challenges at hand. This is a case for more TEA and like-minded

solutions that are driven from the base, in response to challenges that locally based innovators are developing. Government and local authorities have a responsibility to harness these innovations and ensure that they create the necessary environment for innovators and entrepreneurs (social and economic) to express these ideas and solutions to local problems.

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