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A case study of innovation management strategies at MTN in South Africa

Themba Sikampula

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2015

ABSTRACT

In an era characterised by a dynamic environment, with tough financial conditions, it is vital for organizations to be highly competitive in order to survive under such tough conditions, be able to create shareholder value and play a major role in the economy and socio-economic development. Innovation management provides mechanisms for organizations to remain competitive, such that they can derive huge benefits from employing innovation strategically.

This study sets out to investigate MTN's innovation management strategy, looking at the approach or systems and processes that MTN employs in order to improve its innovation capabilities and also what are the conditions or factors that enable or hinder its innovation success. A case study approach was used to explain the methodologies and conditions at MTN. Semi-structured interviews were used to gather data for the research questions and a thematic analysis approach was used for the analysis of the data. The research found that although MTN is successful and has had incredible growth, there are no proper methodologies or systems used, as suggested by the literature. The results also shows that MTN has the right condition for innovation, the leadership is experienced, well-educated and relatively young. Diversity is embraced, the culture is tolerant of ambiguity and risk taking.

In order for MTN to fully benefit from Innovation, the study recommends that it establish well defined systems and methodologies, which will help the organization to realise the full potential of its internal resources and dynamic capabilities. Other organizations can still learn from MTN's internal systems and processes as an initial start on the innovation journey.

DECLARATION

I, Themba Sikampula, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Themba Sikampula

Signed at WBS….

On the…….. day of ……

DEDICATION

This work is dedicated to all my friends and family members who constantly pushed and encourage me during the difficult time to make sure I complete my MBA. Their belief in me has been a pillar of strength.

ACKNOWLEDGEMENTS

I would like thank all the staff at MTN, ICASA, ZTE and Ericsson for allowing me access in their organizations to be able to do this research. I would like to thank all the participants for taking time out of their busy schedules to provide valuable insights for this research. I would like thank Mr. Khumbulani Mkhize for his unconditional support, his help has been invaluable for completing this research. Lastly, I would like to thank my supervisor, Dr. Diran Soumonni, for his support, input and guidance. His guidance has made the road a little bit easier to travel.

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CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose of this research project is to examine the innovation management strategies in high technology firms or organizations, in particular, in the telecommunications sector in South Africa.

1.2 Context of the study

Key terms include: (i) Innovation management strategies (ii) high technology firms in South Africa

South Africa is a developing country, situated at the southern tip of the African continent, with a population of roughly 53 million people. The majority of the population is black, and needs significant social and economic development. According to the World Bank (2012), *South Africa Economic Update - focus on Inequality of Opportunity Report,* South African is an upper middle income country. While the country is classified as middle income, it is struggling to create employment opportunities, with unemployment standing at around 25 percent and among the highest in the world (World Bank, 2012). The GDP growth rate has been around 3.2 percent, which is not enough to deal with the high job demand in the labour market.

Fedderke and Simkins (2012), state that South Africa's aggregate growth has been gradually rising since the 1970's, and the growth was mainly from capital and labour inputs. There was little influence from technology, but the situation changed from the 1990's. The labour and capital contribution to the growth in GDP dropped, with labour contributing negatively and capital contributing relatively weakly, with technology starting to be the major player. This is clearly shown in figure 1 below.

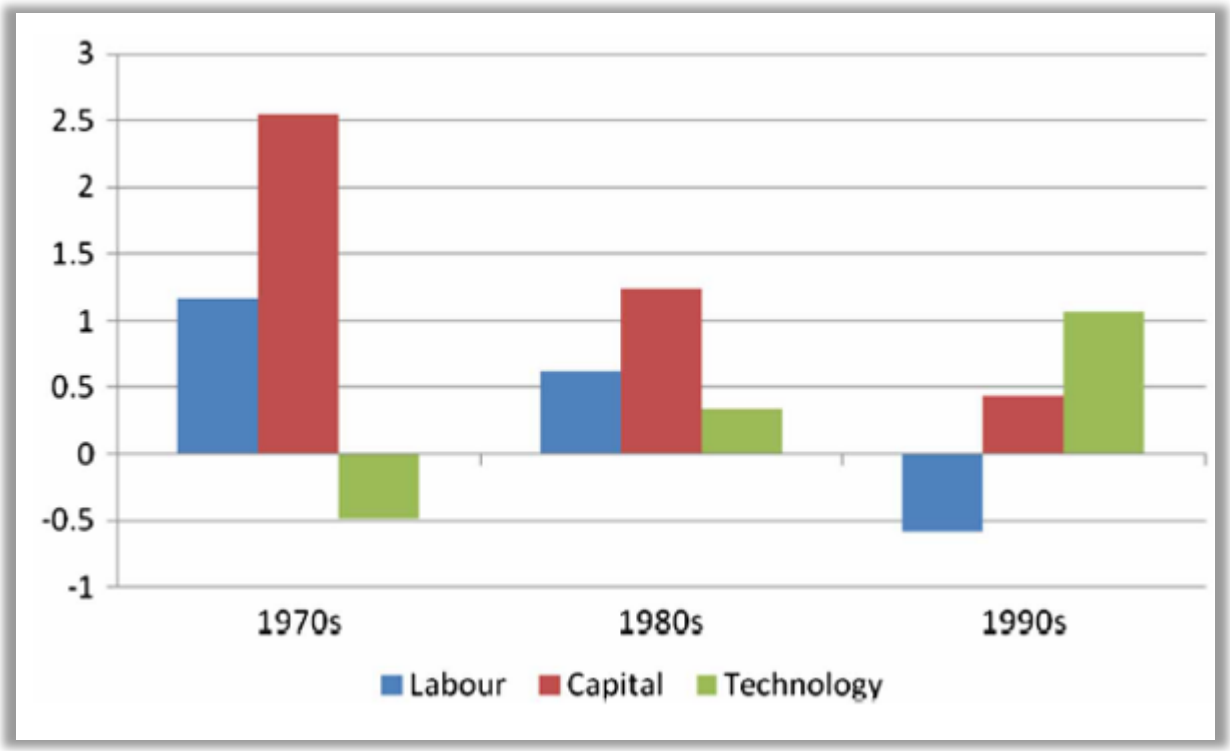


Figure 1: Decomposition of growth in real GDP based on the contribution of factors of production and technological progress. Figures are in percentages. Source - (Fedderke & Simkins, 2012)

According to Fedderke and Simkins (2012), the decline in capital contribution to GDP growth is the result of the slowdown in the investment rate that is taking place in South Africa.

The government has realised that labour and capital alone are no longer enough to sustain GDP growth going forward. A new strategy for growth is needed. The South African government has identified innovation as one of the growth strategies, as indicated in the Ten-Year Innovation Plan (TYIP) and other national policies. The TYIP is a strategic plan to help the country move towards innovation and a knowledge-based economy (Department of Science and Technology, 2008). Furthermore, it has started facilitating and encouraging development of innovation capacity through various different policies, like tax incentives for the organizations that are involved in innovation, research and development. For instance, a tax deduction of up 150 percent is provided to organizations that are

involved in science and technology research and development (R&D) (Department of Science and Technology, 2012). This deduction is for operational expenditure on R&D. Government is creating this environment for business in order to use research and innovation for the social and economic growth of the country.

David J. Teece (2007) looks at innovation and R&D with a holistic point of view. He states that organizations must have dynamic capabilities if they are to maintain superior performance in an open economy. The basis for dynamic capabilities are the distinct skills, processes, procedures, organizational structures, decision rules and disciplines. He says that organizations that have strong dynamic capabilities are strongly entrepreneurial by nature.

The telecommunication sector in South Africa has demonstrated a strong innovation performance and has been a success story for the country. South African telecommunication companies, both MTN and Vodacom, have enjoyed great success in the last 20 years. They are not only successful here at home, but also successful in other African countries. Having been established in 1994, MTN has had significant growth, and now operates in 22 countries in African, Asia and the Middle East. This is a great achievement by MTN, and indeed, a great achievement for the entire country. Despite MTN's success and the state's role in enabling the environment, MTN has been criticized as focusing on maximising its profits, while contributing relatively little to the country's socio-economic development. This was evident when the Independent Communications Authority of South Africa (ICASA) tried to reduce the amount that is paid by cellular phone users in South Africa for making phone calls. The reduction of cell phone call rates was done by reducing the mobile termination rate (MTR) and MTN took ICASA to court in a bid to stop ICASA from implementing a lower rate for mobile termination rates (ICASA, 2013).

While the success story about MTN provides lessons for other South African businesses in terms of innovation and R&D, STEPS (2010) states that despite the large sums of money spent every year on R&D, thousands of children die from waterborne diseases, more people still go hungry, poverty and unemployment is still rife in poor parts of the world. While people still go hungry and unemployment is rife, investors demand growth and organizations face a challenge of creating shareholder value. Hart and Christensen

(2002) states that organizations need to find new markets or products and in itself, this is a big challenge. The authors state that organizations can generate growth and satisfy social and environmental stakeholders by using “great leap” to the base of the economic pyramid, where many people still want to be part of the market economy for the first time. This will help the organizations find growth markets for the future while lifting people out of poverty. The authors further state that this is where organizations can best develop technologies that are needed to address social and environmental challenges that are associated with economic growth. The South African government is trying to deal with some of these issues by enabling the telecommunication environment through policies and process and also by playing a major role through its majority stake at Telkom, a telecommunication company with Telkom mobile being its mobile arm. How can Telkom and other South African organizations learn from the innovation and R&D of MTN and be able to provide affordable service, create employment and alleviate poverty?

One question that this research report asks and seeks to answer is what innovation management strategies MTN used in order to achieve this kind of success. Since government is pursuing innovation and R&D as an economic growth development strategy, job creation and poverty alleviation for the country, what is the innovation management strategy MTN uses and does MTN uses some of its revenue income as R&D investments. These are some of the things this research study seeks to uncover. MTN has helped to some degree in job creation and providing telecommunication services though they remain unaffordable to the poor. Telkom as a state-owned enterprise can play a major role in this regarding if they can benefit from learning from MTN’s strategy. In this study I intend to investigate the innovation management strategy within MTN in order to explain its approach in such a way that some of its elements could be replicated by other high technology firms in South Africa. At the end I hope to derive lessons that can be used by other South African business.

1.3 Problem statement

1.3.1 *Main problem*

This study evaluates innovation management strategies at MTN. It seeks to identify what managerial processes and systems the firm employ to improve their broadly-defined innovation capability and outcomes, as well as to identify the conditions and factors that enhance or hinder their success. These outcomes include not only increased profits and the expansion of new services, but also affordability, skills development and job creation, and technological upgrading and adaptiveness.

1.3.2 *Sub-problems*

The first sub problem is to identify the methodology or processes and systems that MTN employs to improve their innovation capability and outcomes.

The second sub problem is to identify the conditions and factors that enhance or hinder their success.

1.4 Significance of the study

The study aims to provide some insights into the strategies that high technology firms in South Africa use to manage innovation. This study could assist these firms to identify and improve upon the mechanisms and factors that lead to successful or unsuccessful development, commercialization, adoption and implementation of innovative solutions or processes. This study would have achieved a great deal if the findings can assist other high technology organizations with the implementation of innovation management strategies.

The choice of this research topic stems from rising concern about the low GDP growth and high unemployment rate in South Africa. Is the country building innovative organizations that can help in its growth and development and subsequently alleviate its currently high

unemployment rate while enabling the country to become recognised as a much more innovative one?

Despite the availability of literature on innovation, there is still a gap in case studies done within South African organizations and their innovation management strategies that needs to be thoroughly investigated and further clarified. Similarly to the Portuguese case study completed by V. P. Galindo, Noronha, and Nijkamp (2011) looking at institutional capacity to dynamically innovate, this study looks at South Africa, especially a South African organization.

1.5 Delimitations of the study

Mobile Telecommunication has been a success in South Africa. There are more people with cellular phones than landline phones. This study focuses on this sector, and uses MTN as a case study. MTN has been able to grow a significant foot print in the African continent - they operate currently in 22 countries in African, Asia and the Middle East. They make a good case for understanding the following innovation management aspects:

- Methodology or processes that lead to increased likelihood of successful outcomes.
- Adoption and implementation of innovative solutions
- Characteristics of innovative organizations

1.6 Definition of terms

Innovation – Sam Pamisano, CEO of IBM, quoted by (David J Teece, 2007), defines innovation as reinventing business processes and building entirely new markets that meet untapped customer demand.

Knowledge-based economy - Department of Science and Technology (2008) defines a knowledge-based economy as the production and dissemination of knowledge that leads to economic benefits and enriches all fields of human endeavour.

Dynamic capabilities – “is the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines – which undergird enterprises-level sensing, seizing, and reconfiguring capacities are difficult to develop and deploy. Dynamic capabilities enable business enterprise to create, deploy, and protect the intangible assets that support superior long-run business performance” (David J. Teece, 2007, p.1319).

Mobile termination rate (MTR) – is the amount that is paid by each mobile operator to carry each other’s calls.

1.7 Assumptions

- I have access to the selected firms.
- The firms freely share their views on innovation management strategies.
- The firms assign me an experienced and knowledgeable representative on their business models.
- The information that they provide to me is accurate and a true reflection of the firm’s business model.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to provide a foundation and a framework of the research problem. The aim is to get a broader understanding of innovation, innovation methodologies, processes and systems, and then identify the conditions and factors that enhance or hinder innovation.

Eveleens (2010) states that researchers have done a great deal of work over the last 35 years, providing us with a broad range of innovation process models. This paper is framed around simple three steps on innovation processes and management (Eveleens, 2010). The author states that the first step is knowing how the innovation process can be theoretically and conceptually modelled. Secondly, one should extract the management implications from the models, that is, which management routines and tools stimulate the process of innovation. Lastly, the researcher should look at the implications of the obtained list of routines and tools. So this paper is guided by his three questions:

- What innovation process models exist in the literature?
- What management processes and management tools can be extracted from literature that stimulate the innovation process?
- What are the implications for practical use of innovation management routines and tools that can be found in the literature?

This research is about investigating innovation management strategy at MTN, its innovation methodologies, processes and systems that the company uses.

Ultimately the lessons from this study could be of benefit to Telkom, which is a state-owned enterprise, with its mandate following the objectives of the government of the day. The South African government states that all spheres of government must work together and encourage the development of programmes to redress poverty, underdevelopment, marginalisation of people and communities and other legacies of apartheid and

discrimination (The Presidency Republic of South Africa, 2014). This means that Telkom must be economically sustainable while trying to achieve the government's mandate.

The key to this report is innovation, which is defined by Hobday (2005), as a product, process or service new to the firm and not only new to the world or marketplace. The following is a comprehensive definition by (Crossan & Apaydin, 2010), who define innovation as the production or adoption, assimilation, and exploitation of value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome. This is the definition that is adopted in this research, as it covers all the aspect about innovation, socio-economic, internal and external factors.

2.2 Background discussion.

According to P. V. Galindo, Vaz, and Nijkamp (2011), the concept of economic growth has been on the rise in recent years. The sudden growth theory, the rise in studies on the new economic geography, and the urban creativity and cultural diversity concepts has prompted a worldwide interest in the driving forces and socio-economic impacts of innovation and entrepreneurship.

P. V. Galindo et al. (2011) further state that innovation has been a critical factor of human intelligence and cognitive ability from its earliest stages of development onwards, although it is only in recent history that it has been recognised as a significant driver of social and economic change. They further state that an important way to encourage a process of socio-economic and technological change is to stimulate the continuous production of new products or processes while at the same time, encouraging the adaptation of society to absorb them.

Christensen and Overdorf (2000) mention that there are two types of innovation, that is, sustaining and disruptive innovation. The authors state that sustaining innovations are the types of innovations that make a product or service perform better in ways that customers in the mainstream market already value, while disruptive innovations develop entirely new

markets from the creation and introduction of new kind of products or services. According to Hobday (2005), innovation models at firm-level have increased and become more sophisticated in the industrially advanced countries (IAC). The author says that these models go into the management of innovation and decision-making processes within the firm. The author further states that new firms from emerging countries have increasingly built a competitive presence, yet the innovation models employed in these firms is still unclear. The author points out that in the emerging countries, innovation tends to occur behind the technological frontier defined by leaders in the developed countries.

The following section looks at Rothwell's five generations models of innovation process that are discussed by Hobday (2005), and assesses the generation and highlights both strengths and weaknesses. The author mentioned that Rothwell mentioned the following five points about the five generations: Evolution from one generation to another does not suggest substitution of one model for another, models can coexists or elements of models can be mixed together; Each model is a basic representation of a difficult process that hardly occurs in a pure form; Often the development from one generation to another reflects changes in the dominant view of what constitutes best practice, rather than actual progress; Most suitable models will differ from industry to industry and between different types of innovation, that is, innovation can be radical or incremental. The processes that occur within firms are dependent on exogenous factors such as the pace of technological change.

First Generation Models

According to Hobday (2005), the first generation models of innovation were technology push models. They were linear, developed in the 1950's and treated innovation as a sequential process that took place in discrete stages. He further states that these models worked on the basis that scientific discovery preceded and pushed technological innovation via applied research, engineering, manufacturing and marketing.

Figure 2 below indicates this generation:

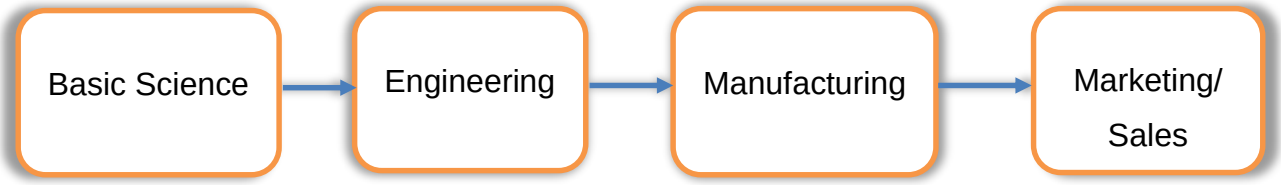


Figure 2: First generation technology push models (1950s to mid-1960s). Source: (Hobday, 2005)

Second Generation

Hobday (2005), quoting Rothwell, states that in the latter half of the 1960s, experiential studies of the innovation process began to highlight market-led approaches. He says that these were also linear in nature, stressing the role of the marketplace and market research in identifying and responding to customer needs and directing research and development (R&D) investments towards these needs. In the second generation models, the marketplace was the source of ideas and R&D had to meet these market demands. Figure 3 below indicates this generation:

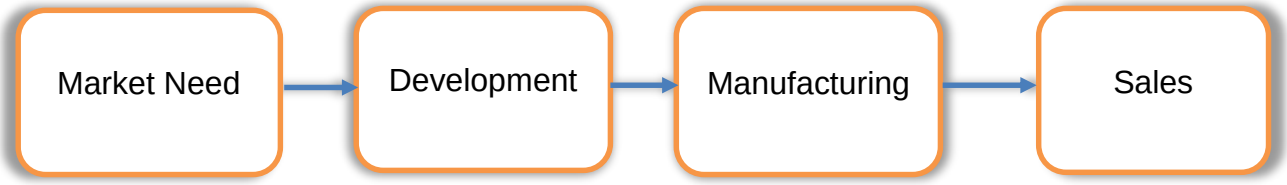


Figure 3: Second generation demand pull models (1960s to 1970s). Source: (Hobday, 2005)

Third Generation

Hobday (2005) argues that the above linear models were extreme and unusual examples of industrial innovation. He further quotes Mowery and Rosenberg stating that innovation was characterised by the connection or interaction between science and technology and the market place. Rothwell, quoted by Hobday (2005), stressed that the interaction was not essentially continuous but could be connected functionally and have interdependent

stages involving complex communication paths and intra and inter-organizational linkages. He notes that the interactive model explicitly links the decision making of firms to the science and technology community and to the market place.

Figure 4 below indicates the third generation:

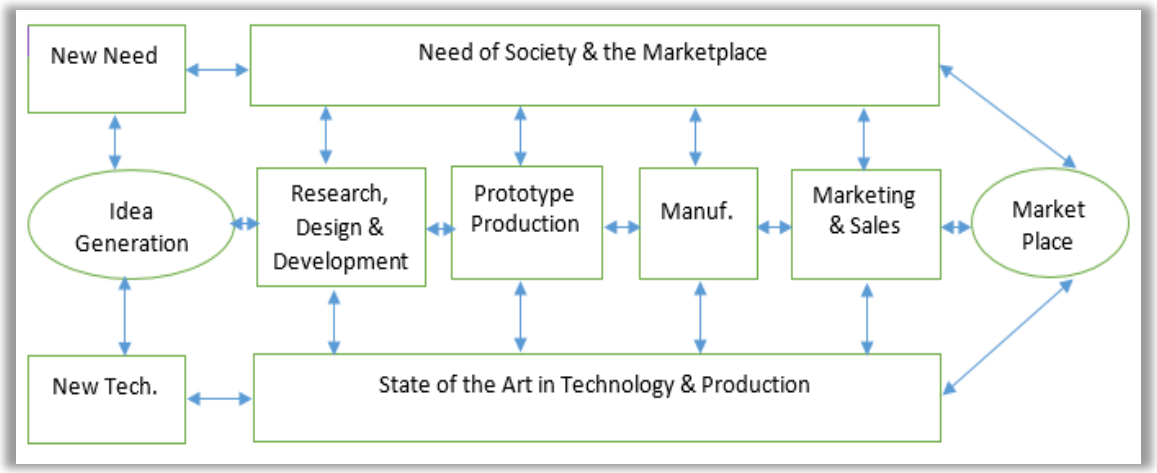


Figure 4: The coupling or interactive model of innovation. Source: (Hobday, 2005)

Fourth generation

Hobday (2005), says that in the 1980s, an integrated or parallel set of models that involved major functional overlaps between departments or activities were developed. He notes that the fourth generation models attempted to cover the cross functional integration within firms, as well as their external integration with activities in other companies, including suppliers, customers and universities and government agencies. Figure 5 below indicates the fourth generation:

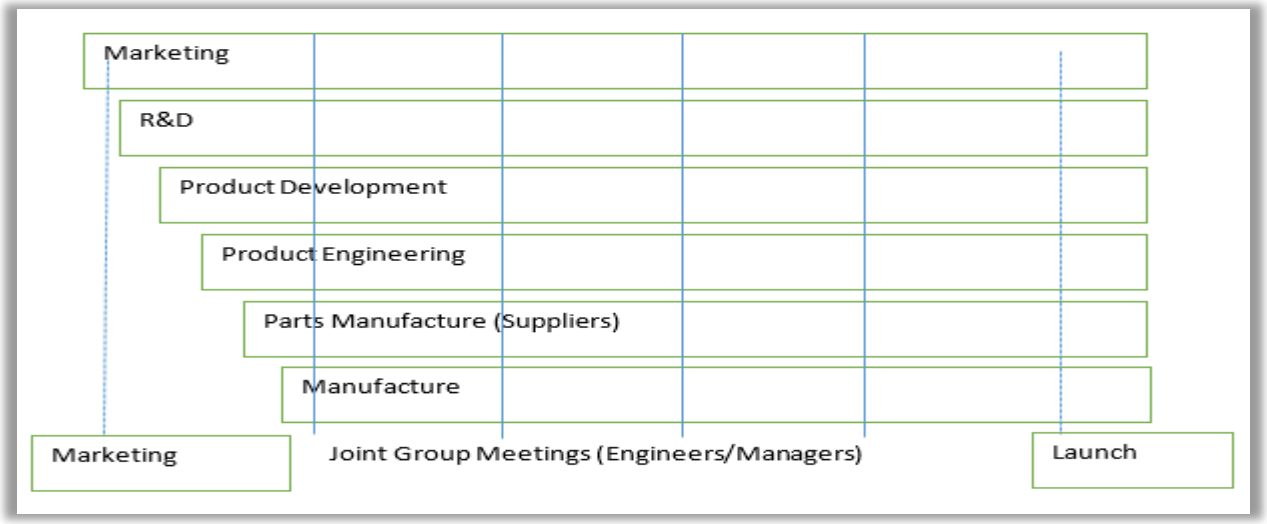


Figure 5: An integrated (fourth generation) innovation model. Source: (Hobday, 2005)

Fifth Generation

According to Hobday (2005), the generation system's integration and networking models is about the learning that happens within and between firms. This suggests that innovation is basically a distributed networking process. The author further states that these models are based on an increase in corporate alliances, partnerships, R&D consortia and joint ventures of all kinds. He also states that Rothwell noted that the key difference between the fourth generation and fifth generation was the usage of the electronic toolkit operating in real time to speed up and automate the process of innovation. This model is both descriptive and normative, put forward to suggest the processes that firms should put in place if they wished to become leading edge innovators. He says that Rothwell maintained that even though fifth generation models were difficult and costly, the benefits to be gained were great in terms of speed of innovation, cost reduction and attaining market leadership. Figure 6 shows the fifth generation:

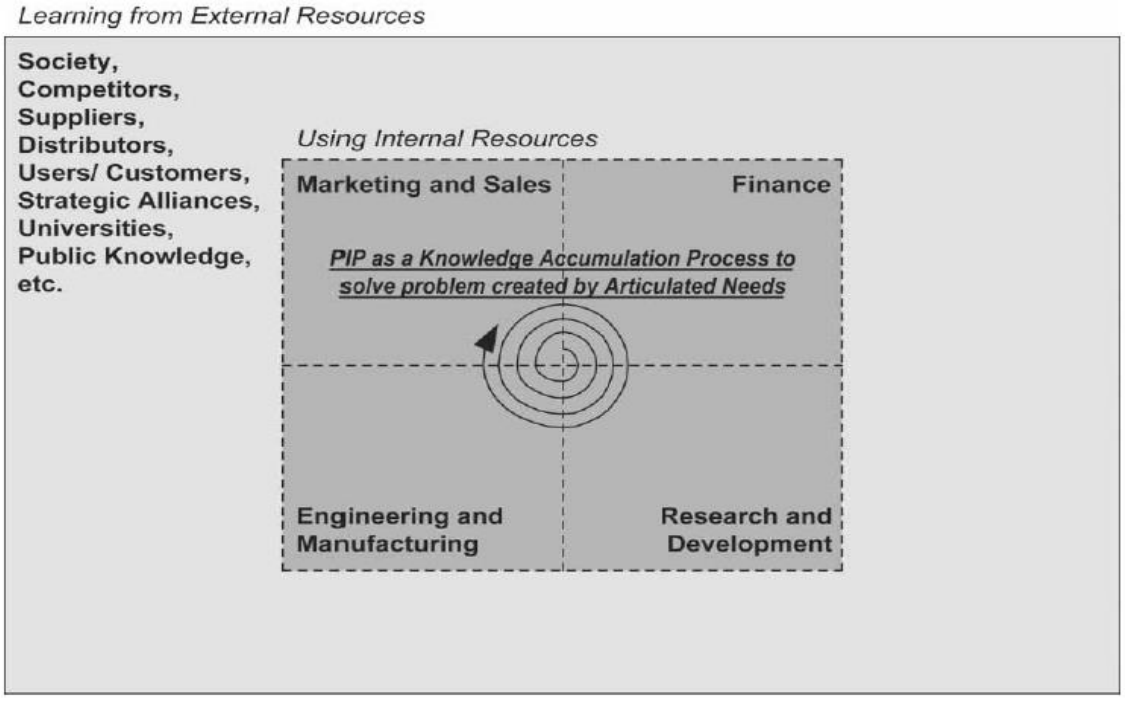


Figure 6: A System integration and network model. Source: (Hobday, 2005)

The fifth generation model addresses the speed of innovation and attaining market leadership. The question that arises from this is that after attaining the leadership, how do firms sustain the superior market leadership? This is the right place to re-introduce the main focus of this paper, innovation in the telecommunication industry. This report seeks to investigate the methodologies, processes and conditions of innovation at MTN, a telecommunications company in South Africa. According to Godoe (2000), the evolution of telecommunications has been rapid and dynamic. The fast pace of technological development in telecommunications is based on a stream of radical innovations. Current theories define radical innovations as haphazard scientific breakthroughs, chance and serendipity. Contrary to this, Godoe (2000) states that in telecommunications there is practical evidence that suggests a systemic relationship between science and technology based R&D and the emergence of radical innovations.

Berkhout and Van Der Duin (2007) introduced a radical change from previous generations of innovation models, replacing the accustomed chain architecture by a cyclic architecture: “The circle of change”. The authors further state that the circle of change is positioned as an open innovation arena, where change generates opportunities and opportunities trigger

entrepreneurs to innovate beyond existing boundaries. According to Berkhout and Van Der Duin (2007), the cyclical innovation model (CIM) was developed in the nineties as the foundation of the ongoing change in the public and private organizations. This model links changes in scientific insights, changes in technological capabilities, changes in product design and manufacturing and changes in markets. The model has four nodes of change that are connecting cycles of change. Figure 7 shows the representation of this model:

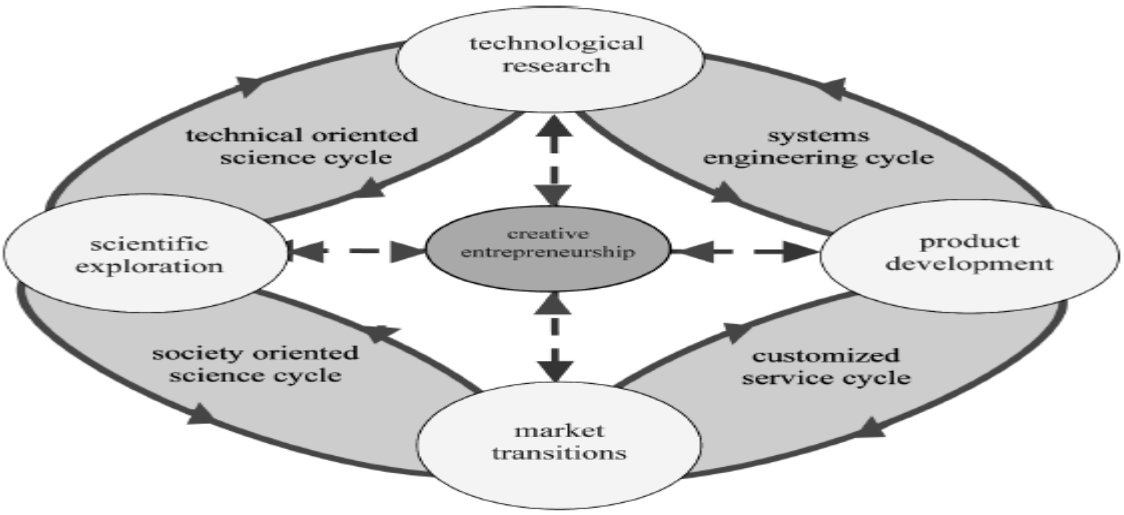


Figure 7: A Cyclic Innovation model. Source: (Berkhout & Van Der Duin, 2007).

Godoe (2000) states that although the telecommunications industry experiences radical innovations, it is mediated by what may be termed as innovation regimes. An innovation regime is defined by the author as principles, norms and ideology, rules and decision-making procedures forming actor expectations and actions in terms of the future development of telecommunications technology. The author further says that the conceptual framework of innovation regimes allows the explanation of the creation of radical innovations as a rational outcome of strategic goals. This suggests that the radical innovation may be created on purpose and for a purpose.

According to Bourreau and Doğan (2001), there are two types of innovation in the telecoms industry, innovation for new services and innovation for alternative network infrastructures. The authors mention that innovation for new services is done by telecommunication operators and the equipment suppliers take care of the innovation for new technologies. The network innovation is linked to the adoption process by the telecoms operators.

Operators have to decide if and when to adopt the new technology. The authors conclude that the adoption process resembles innovation and they refer to it as “exogenous innovation” and both innovations of services and technologies as “endogenous innovation”.

Bourreau and Doğan (2001) also mention that regulation affects these innovative activities in two different ways. Firstly, by price regulation (regulation of interconnection charges and retail prices), this alters industry profits and creates a need to innovate. Secondly, both price and entry regulations change the terms of entry, resulting in innovation decisions regarding new entry. They state that the objectives of sector specific regulation is to ensure an evolution to a self-sustaining pro-competitive market structure in which the firms behave in a competitive manner to create benefits from competition, in terms of lower prices, better quality and extended variety of product choice. They also mention that regulation helps to achieve maximum market growth in terms of both volume and value so that markets achieve both lower costs and new products.

Van Cuilenburg and Slaa (1995) point out that when dealing with competition in telecommunications, governments have to decide on public interest matters in terms of freedom of communication, opportunities for social interaction and economic production. The authors also mention that government should enforce policies that give maximum assurances of political, social, cultural and economic welfare in society. These policies, which can be called “environmental regulations,” create incentives for organizations to be innovative. Koberg, Detienne, and Heppard (2003) state that ever-changing environmental pressures, such changes globally and domestically by customers, clients, suppliers, regulatory bodies and agencies, along with market and technological developments, drive internal organizational change.

This report looks at innovation at MTN, a South African firm. South African telecoms followed mostly the same route as most countries in the world. Gillwald (2005) states that in the mid-1990s, South African telecommunications policy was hailed as following on international best practice while at the same time looking to deal with the country’s particular historical legacies.

South African telecommunications, originally Post and Telecommunications, was a classic post, telephone and telegraph and it was a state-owned monopoly as mentioned by Horwitz (1997). The author also states that around 1991, the post office was separated from telecommunications, giving birth to TELKOM, a telecommunication company, which remained state-owned. Around 1993, cellular licences were awarded to two mobile cell phone companies, MTN and Vodacom. According to Gillwald (2005), the South African telecommunications sector has been at the forefront of the country's infrastructural reform process, and it was the first sector to confront some of the inherent pressures within the country's core policy objectives, namely:

- Accelerated sector growth and modernization,
- The achievement of universal access/services,
- Promotion of economic efficiency, and
- Black economic empowerment.

Gillwald (2005) continues by mentioning that the above national strategies to accomplish these policy goals, although slow in implementation, have largely conformed to international economic reform best practice, and include:

- Restructuring and privatisation of state-owned enterprises (SOEs),
- Market reform or liberalization,
- Economic regulation,
- Universal access or service funding mechanisms and
- Promotion of foreign direct investment (FDI).

The author continues and says that in line with global trends and in compliance with the World Trade Organization (WTO), South Africa formally adopted in 1998 the Basic Agreement on Telecommunications, with the country's commitments reflecting the reform model as pronounced in the Telecommunications Act which had been passed in 1996 and became operational in 1997. Gillwald (2005) states that the model included three components, namely privatisation, competition and independent regulation. The author further states that as a developing country, South Africa did not possess much of the expertise and knowledge in the areas included in the model, and the country relied on its

international policy advisors, who proposed the following three strategies that formed the basis of an international reform model:

- That the state-owned operator (TELKOM) be partially privatised with the extension of the monopoly in order to encourage investment. This extension of monopoly was for five years.
- In the mobile phone market, a third mobile licence was proposed to compete with MTN and Vodacom and the Value-Added Networks Services (VANS), including Internet Service Providers (ISPs), was opened for competition.
- A regulatory body (SATRA in 1997, which became ICASA in 2000) was formed to implement policies for a well-functioning and stable market.

In this ever-changing environment, Koberg et al. (2003) states that top managers must continually adapt to dominant environmental forces that cannot be foreseen, frequently at an accelerating pace. The authors also say that top managers must recognize opportunities for innovation, reshape the organization, alter its path, and change the way it adapts and innovates. In order for firms to be able to withstand these environmental pressures, David J Teece (2007) mentions that organizations must have dynamic capabilities. He draws on the social and behavioural science in an effort to specify the nature and micro foundations of the capabilities necessary to sustain superior enterprise performance in an open economy with rapid innovation and globally dispersed sources of invention, innovation, and manufacturing capability. He states that sustainable advantage requires unique and difficult to replicate dynamic capabilities. Dynamic capabilities enable business enterprise to create, deploy, and protect the intangible assets that support superior long-run business performance.

David J Teece (2007) further mentions that these dynamic capabilities can be combined into the capacity to sense and shape opportunities and threats; to seize opportunities; and to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the business enterprise's intangible and tangible assets. The author describes the microfoundations of dynamic capabilities as the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines, which strengthen enterprise level sensing, seizing, and reconfiguring capabilities that are difficult

to develop and deploy. Christensen and Overdorf (2000) also emphasise that organizational capabilities lie in factors that determine what an organization can and cannot do, and these factors are its resources, its processes and its values. The authors refer to the resources as both tangible, for example, people, equipment, technologies, and cash, and intangible, being product designs, information, brands, and relationships with the suppliers, distributors, and customers. Christensen and Overdorf (2000) state that the second factor is the processes, and these are patterns of interaction, coordination, communication, and decision making that employees use to transform resources into product development, manufacturing and budgeting. The authors state that some processes are formal and well defined and documented and others are informal and are just routines or ways of work that have evolved over time. The authors state that the third factor is values, and these are standards that employees use to set priorities, standards used to decide whether a customer is important or not, standards used to decide whether an idea for a product is attractive or not. The authors further state that it important for organizations to train employees to make autonomous decisions about priorities that are in line with the strategic direction and business model of the organization. David J Teece (2007) further states that enterprises with strong dynamic capabilities are intensely entrepreneurial and they do not only adapt to business ecosystems, but they also shape them through innovation and through collaboration with other enterprises, entities and institutions.

This section concludes by examining the multi-dimensional framework of organizational innovation (Crossan and Apaydin (2010). These dimensions deals with organizational innovation as a process and the authors say these dimensions seek to answer the question of “how” and “what”. The driver and source of innovation can either be internal or external, according to them. Crossan and Apaydin (2010) mention that the internal driver of the innovation process can be available knowledge and resources, whereas an external driver can be a market opportunity or imposed regulation. They further say that the internal source of innovation is ideas, whereas an external source of innovation is adoption of innovation invented elsewhere. Since this is an integrated framework, it will serve as the basis of the analysis in Chapter 5. This is summarized by the following framework diagram which is what is followed in this study.

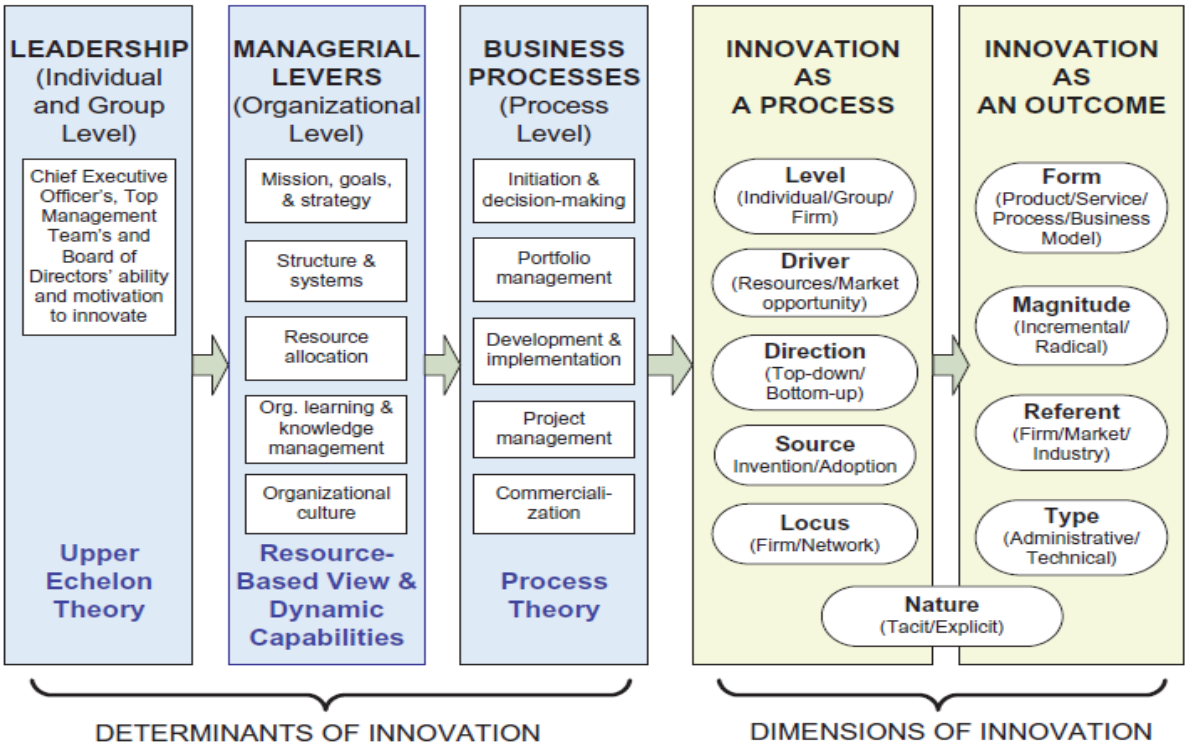


Figure 8: A Multi-dimensional framework of organizational innovation. Source: (Crossan & Apaydin, 2010).

2.3 First sub-problem

The first sub-problem is to identify the methodology or processes and systems, like systems to capture employees' new ideas that MTN employs to improve its innovation capability and outcomes.

2.3.1 *Innovation methodologies / processes*

Combining (Sundbo, 1997) with Tidd and Bessant (2008) and Eveleens (2010), the innovation process can be defined as the development and selection of ideas, turning those ideas into reality and capturing value from them. Eveleens (2010) states that the innovation process is not limited to, but follows the following phases: it starts with the idea generation or search for ideas for innovation, after which the next step is decision making, which idea to pursue or not. The author notes that this stage should be based on the firm's

strategy and whether the idea is potentially lucrative or whether it is going to increase public value. The next step is to turn the selected idea into something real, a product, process or service. The author calls this phase development and testing. The fourth step is the implementation or launch phase. This is when newly developed products, process or services are implemented in the real world. The final step is the learning phase. This is about learning innovation and how the innovation process was carried out. The idea is to improve and avoid mistakes for future projects. The following is a representation figure:



Figure 9: Simplified model of the innovation process. Source - (Tidd & Bessant, 2008)

Teece (1992) mentions strategic alliances or inter-firm agreements as a form of innovation management. Strategic alliances or inter-firm agreements can be viewed as an innovation methodology or process that an organization can use in order to also enhance its dynamic capabilities. He states that there are many contractual agreements between and among firms to enable the development and commercialization of new technologies. These strategic co-partnerships involve resources and activities. The author states that strategic alliances include: an exclusive purchase agreement; exclusionary market or manufacturing rights; technology swaps; joint R&D or co-development and co-marketing arrangements.

2.3.2 *Research Question 1*

Considering the literature review above, this study seeks to establish whether or not the South African telecommunications firm MTN, is innovative, and if so how? This will be done by asking the following research question:

- What are the methodologies or processes and systems that MTN employs in order to improve their innovation capability and outcomes?

2.4 Second sub-problem

The second sub-problem is to identify the conditions and factors that enhance or hinder its innovation success.

2.4.1 *Innovation conditions / factors*

Koberg et al. (2003) state that the age and size of the firm plays a major role when it comes to innovation. The authors state that as firms age and become larger, structural rigidity and inertial forces increase and restrict the ability of the firm to innovate. They further state that bigger and older organizations are likely to have in place the routines to stimulate procedural, personnel-related or process innovations, but are unlikely to be able to change quickly enough to develop radical innovation.

The literature above has covered the environmental conditions including regulatory policies and dynamic capabilities that encourage and enable innovation. Crossan and Apaydin (2010) provides a summary of measures of the factors of organizational innovation that emerged during their review. This list was collected from 28 experts through a study that was conducted. Crossan and Apaydin (2010) start with innovation leadership and confirm the role of leaders, saying that, not only is their support and guidance vital in promoting innovative efforts, but equally important is their ability to create conditions for the subsequent implementation of innovation. They break the leader's ability and motivation to innovate into two groups of factors, namely individual (CEO) and group (top management team and board of directors).

The second part is managerial levers stating that they play a direct and indirect role in enabling innovation. These are dynamic capabilities. The third and last is business processes which also support innovation.

2.4.2 *Research Question 2*

- What are the conditions or factors that enhance or hinder innovation success?

2.5 Conclusion of Literature Review

Innovation has evolved and changed over the years, from the years of first generation models of technology push to the fifth generation model of an integrated connected model in the 1990s. Berkhout and Van Der Duin (2007) introduced a different innovation model, replacing the accustomed chain architecture by a cyclic architecture: “The circle of change”. This model links changes in scientific insights, changes in technological capabilities, changes in product design and manufacturing and changes in markets.

Koberg et al. (2003) state that it is the ever-changing environmental pressures, such as global customers, domestic customers, clients, suppliers, regulatory bodies that drive innovation. David J Teece (2007) further mentions that dynamic capabilities are crucial for superior competitiveness. Crossan and Apaydin (2010) introduced the multi-dimensional innovation framework. In conclusion. These authors, among many others who have contributed volumes of papers on innovation, demonstrate and describe the importance of innovation as a source of competitive advantage and the role it plays in the economic and social development of any society.

2.5.1 *Research Question 1:*

This study seeks to establish whether or not the South African telecommunications firm MTN, is innovative, and if so how? This is done by asking the following research question:

- What are the methodologies or processes and systems that the firm employs in order to improve its innovation capability and outcomes?

2.5.2 *Research Question 2:*

- What are the conditions or factors that enhance or hinder innovation success?

CHAPTER 3. RESEARCH METHODOLOGY

This chapter discusses the methodology that is used in this study. It also covers the research design, population sample, research tools, how the data is collected and analysed and then concludes with the limitations, validity and reliability.

3.1 Research methodology / paradigm

This study uses a qualitative research method. Bryman (2012) defines qualitative research as a strategy that emphasizes words rather quantification: “entails an inductive approach to the relationship between theory and research, in which the emphasis is placed on the generation of theories; embodies a view of social reality as a constantly shifting emergent property of individuals’ creation” (Bryman, 2012, p. 36). In summary, Bryman (2012) states that qualitative research reflects a strategy that is mostly inductivist, constructionist, and interpretivist, but does not always subscribe to all three features.

On the other hand, King, Keohane, and Verba (1994) state that qualitative research uses different approaches, which does not rely on numerical measurements . “It tends to focus on one or a small number of cases, to use intensive interviews or depth analysis of historical materials, to be discursive in method, and to be concerned with a rounded or comprehensive account of some event or unit” (King et al., 1994, p. 4).

This study is about the processes and systems, as well as the conditions or factors that enhance or hinder innovation success. It focuses on the key themes regarding the innovation conditions and processes at MTN. The study seeks to understand if the firm in question is innovative at all, based on the theory, testing models that have emerged from the literature review. This involves identifying themes or key words and linking them back to what emerged in the literature review. The dynamic capability literature states the study is going to identify things like skills, conditions, behaviours, systems and methodologies and many more determinants.

Bryman (2012) points out the following criticisms about qualitative research: qualitative researchers face a powerful battery of criticism, which are: qualitative research is too

subjective; difficult to replicate; problems of generalization; and lacks transparency. Having identified the conditions and requirements for research methodology method, the conclusion for this study is that it is best suited for a qualitative research strategy.

3.2 Research Design

This study evaluates innovation methodologies and processes for the second biggest South African telecommunication firms, MTN. A case study design method is used. Yin (2009, p. 18), defines a case study as an “empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. The author further states that case study is used when you are trying to understand a real-life phenomenon in depth, but such understanding involves important contextual conditions.

Yin (2009, p. 18) further adds to the case study definition that “case study inquiry copes with the technically distinctive situation in which there will be more variables of interest than data points, and as one result relies on multiple source of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis”.

Bryman (2012) states that this study design involves comprehensive and thorough analysis of a single case. This includes studying a single community, single school, single family, single organization, single person or single event.

(Yin, 2009) points out the following key aspects about the case study: it explains the assumed causal link in real life interventions that are complex for survey; secondly, it describes an intervention and real life context in which it occurred; thirdly, it shows certain topics within an evaluation and, lastly, it enlightens situations in which the intervention being evaluated has no clear single set of outcomes.

Bryman (2012) also points out the following challenges or disadvantages regarding the case study, that the case study findings cannot be generalized. These are the key issues that this study needs to be mindful of, when conducting the research and collecting data.

3.3 Population and sample

3.3.1 *Population*

Bryman (2012) describes population as the universe of units from which the sample is selected. This study was targeted to reach 12 senior managers, from MTN, ICASA, ZTE and Ericsson. The managers were divided as follows: five senior manager from MTN; three senior managers from ICASA, two senior managers from ZTE and two senior managers from Ericsson.

3.3.2 *Sample and sampling method*

Bryman (2012) describes sample as the subset of the population that is selected to be investigated. The sampling method for this study is a systematic, but stratified random sampling method. The idea is to ensure that the resulting sample is distributed in the same way as the population in terms of the stratifying criterion. The stratification criteria for this study are the selected departments of the above organizations in order to meet the criteria of this study.

The target number for the sample is one manager from MTN, ICASA and Technology suppliers. In total there will be four managers for sampling. This helps in understanding and getting a feel of the respondents and their response or answers. If there are changes that need to be made regarding the respondents or interview questions, this sample helps in determining what the changes should be like.

Table 1: Profile of respondents

Description of respondent type	Number to be sampled
Senior manager (MTN)	1
Senior manager (ICASA)	1
Senior manager (ZTE)	1

Senior manager (Ericsson)	1

3.4 The research instrument

This study uses the case study method to investigate in depth, in an effort to understand the innovation management strategy at MTN. In order to be able to get the respondents' point of view and be able to do a comprehensive analysis, a semi-structured interview instrument is used. Bryman (2012, p. 212) states that a semi-structured interview "refers to a context in which the interviewer has a series of questions that are in the general form of an interview schedule, but is able to vary the sequence of questions. The questions are frequently somewhat more general in their frame of reference from that found in a structured interview schedule. Also the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies."

The interview questions are provided in Appendix B for senior management of the organizations and Appendix C provides the sample of the transcript. A request or motivation letter to the respondents to participate is also attached as Appendix A.

3.5 Procedure for data collection

The interviews were booked with senior management of the organizations and the interviews took place in their work place offices. This maintained the business environment and language. Performing the interviews in their offices also provided a chance to witness the working environment of the respondent, which is office layout atmosphere and employee interaction. The interviews were documented by way of recordings and written notes.

3.6 Data analysis and interpretation

As outlined above, the data was collected in the form of scheduled interviews and written notes. The researcher transcribed all the individual interview recordings. The data from

the transcripts was then matched thematically to the research questions using the coding method as mentioned by Bryman (2012) in the thematic analysis approach.

Bryman (2012) states that the thematic analysis approach examines the data to extract core themes that could be identified both between and within transcripts. Although Bryman (2012) talks about incorporating the data within the software, the researcher after transcribing the transcripts, manually searched the recurrences of the themes. The themes were then matched to Crossan and Apaydin (2010)'s multi-dimensional framework, which serves as the basis of the analysis for this research study.

3.7 Limitations of the study

One of the limitations or weaknesses of this study that affect the findings is the honesty of the respondents. This study relies on the fact that the respondents were honest and forthcoming with information. Also one of the limitations or challenges is the comparability in terms of thematic matching to the literature review and data collection methods, since the interviews are audio-recorded and the transcribed. Also as mentioned by Bryman (2012) in the data analysis and coding on what the researcher needs to be alert of, so that the researcher does not lose the meaning of the respondents. The researcher was careful of possible hearing mistakes that might affect the meaning of the respondents' replies.

Also the data collection instruments could undermine the reliability of data if they are not tested and in good working order.

3.8 Validity and reliability

Bryman (2012) states that validity refers to whether the indicator that is created to measure a concept really measures that concept and reliability refers to the consistency of a measure of a concept. Winter (2000) states that in terms of universal laws, validity is evidence, objectivity, deduction, reason, fact and mathematical data. Bryman (2012) mentions that since measurement is not a major preoccupation among qualitative researchers, the issue of validity has little bearing on qualitative studies.

Bryman (2012) also says that other authors suggest different way of evaluating qualitative studies, which is trustworthiness and authenticity. The author further states that trustworthiness is made up of four measures, namely: credibility, which is equivalent to internal validity; transferability, equivalent to external validity; dependability equivalent to reliability and lastly confirmability, equivalent to objectivity.

3.8.1 *External validity*

External validity is about whether the results of this study can be generalised beyond this research, as mentioned by Bryman (2012). The author states that external validity presents problems for qualitative studies due to the use of case studies and small samples.

In the equivalent evaluation method, which is transferability, Bryman (2012) says that thick description is encouraged instead, and that is the rich accounts of details of a culture. The author states that thick description provides others with a database for making judgements about possible transferability of the findings. This study aims at a comprehensive analysis which provides enough information to be able to make a good judgement about transferability.

3.8.2 *Internal validity*

Internal validity is about causality as mentioned by Bryman (2012). In the equivalent evaluation, which is credibility, the author mentions that the credibility of the results involves both ensuring that the research is carried out according to the standard of good practice and submitting research results to the members of the social world for confirmation that the researcher understood that social world. This research study has gone through the research proposal panel at Wits business school in order to confirm that the researcher understood the proposed research.

3.8.3 *Reliability*

Dependability is the equivalent of reliability. Bryman (2012) states that in this evaluation criterion, it is suggested that the researcher should adopt an auditing approach. The author

mentions that this involves in making sure that all records are kept safe and can be easily accessible. This means keeping safe all interview recordings, transcripts and notes.

For this study, one of the requirements for the university is record keeping and being able to produce the audio recordings and transcripts when required. For this study, the data will be kept safe for a period of no less than five years.

CHAPTER 4. PRESENTATION OF RESULTS

4.1 Introduction

The objective of this chapter is to present and describe the results that came from the interviews and secondary data done for this research study. The data was gathered from the three major category players of the telecommunication industry in South Africa, namely the regulatory body, ICASA, the network operator, which is represented by MTN for this case study, and lastly the technology firms known as the technology vendors in the telecoms industry.

Firstly, a highlight of the number of respondents from each site or organization where an interview was conducted is presented and then this is followed by the respondent's profiles, to show how the actual data differ from the planned data. Then the research questions are addressed in separate sections, categorized in alignment with the individual questions that were asked to the respondents. Then the chapter closes with a summary of the results.

4.2 Demographic profile of the respondents

During the interviews, key questions were asked in order to establish the demographic profile of the respondents. These key questions were intended to gather the following three aspects about the respondent:

- The respondent and the respondent's role within the organization.
- The respondent's background and experience
- Respondent's level of education, that is technical and professional expertise

These aspects are described in more details below:

4.2.1 *General Sample profile*

A total of 16 respondents were interviewed as shown in the following table. This is compared against the original planned number, which was 12 interviews. The respondents were collected through a formal channel, sending the research letter to the organization requesting access to perform research interviews and the organization assigning relevant individuals to assist with the research interviews.

Table 2: Interviews Conducted

	Number of Respondent
Planned Total	12
Actual Total	16

The interviews were done to cover different viewpoints of the industry and were categorised as follows:

- Network Operators
- Technology Suppliers or Technology Vendors as they are known in the industry.
- Telecommunication Regulatory Body.

The following table shows the categories within the sample. It shows that the sample consists of eight respondents from the network operator, four respondents from the regulator, four from the technology suppliers and 1 independent respondent.

Table 3: Categories of the Sample

Sample Categories	Planned number of Respondents	Actual Number of Respondent
MTN	5	7
ICASA	2	4
Ericsson	2	1
ZTE	2	3
Independent	1	1
Total	**12**	**16**

In the multi-dimensional framework by Crossan and Apaydin (2010), the authors suggest that the driver and source of innovation can either be internal or external. The authors further state that the internal driver of the innovation process can be available knowledge and resources, whereas an external driver can be a market opportunity or imposed regulation. In order to determine the internal and external drivers at MTN, the interview questions were categorised and grouped according themes. The following table shows the categories with the themes.

Table 4: Interview question categories

Categories	Questions
Leadership factors (behaviour or characteristics) & Experience (Internal drivers)	• Role within the Organization • Level of Education • Number of years in a role
Internal processes and systems (Internal drivers) (Dynamic capabilities)	• Decision Making Process • Sensing User Needs • Determining Technology options • Generation of New Ideas • Learning and knowledge management • Industry Foresight and Scenario Planning
Internal Conditions (Organizational environment) (Internal drivers)	• Diversity • Culture - allow ambiguity, risk taking & tolerance of change • New trends in the industry • Partnerships – local & International.
Regulator (Government Regulation/policy influence)	• Strategy • Enforcing Creativity with the operators • Ensuring Affordability and quality of services

(External drivers)	• Staying abreast of the operators
Suppliers (External partnership influence) (External drivers)	• Unique & Original things for MTN • Understanding/sensing MTN/South African customers • Helping MTN to be operational efficient • Helping MTN achieve affordable & quality service • Staying abreast of developments in the industry

Following the grouping of questions into themes, the respondents were asked questions to determine their role within the organization, experience and formal education. The following table shows the respondents' role within the organization.

Table 5: Respondents Role within the Organization

Respondents Role's	**Number of Respondents**
MTN ➢ CEO/Executive ➢ General Managers ➢ Senior Managers	 ➢ 1 ➢ 4 ➢ 2
ICASA ➢ Senior Managers	 ➢ 4

Ericsson ➢ Manager	➢ 1
ZTE ➢ Principal Architect Director ➢ Key Account Director ➢ Manager	➢ 1 ➢ 1 ➢ 1
Independent ➢ Regional Director of Sales	➢ 1
Total	**16**

The respondents ranged from being fairly new to a significant number of years in their roles. Table 5 shows the number of years for the respondents in their roles.

Table 6: Number of years in the Role.

Number of Years in a Role	**Number of Respondents**
1 – 5	3
6 – 10	7
More than 10	6
Total	**16**

Respondents were also asked about their formal education. The level of formal education ranged from a university junior degree to doctorate or Ph.D. level. Table 6 indicates the respondent's level of formal education.

Table 7: Level of Education

Education Level	**Number of Respondent**
No University degree	1
University degree	6
Honours Level	1
Masters level	7
Ph.D. Level	1
Total	**16**

4.3 Results pertaining to Research Question 1

> **Research Question 1:** What are the methodology or processes and systems that MTN employ in order to improve their innovation capability and outcomes?

As mentioned above, the data is categorised into the network operator, in this case MTN South Africa, the regulator (ICASA), technology suppliers or vendors and an independent commentator. For this research question, several questions were asked to the MTN respondents during the interviews in order to ascertain the methodologies and systems

that MTN uses. These questions are summarised in the following sections. The result of the each question is presented in a tabular format, indicating a theme identified during the content analysis. The theme and number of times with which that theme is mentioned is presented.

4.3.1 *How would you describe the decision making process in your organization, is it hierarchical or it allows for decision making autonomy within departments?*

Respondents were asked to describe the decision making process at MTN, the way they understood it happening or being enforcing in their respective roles. Of the seven responded from MTN, only one respondent stated that the decision making process is autonomous, three said it is hierarchical and the remaining three respondents did not know, they could not decide whether it was hierarchical or autonomous.

The following table present the results of the respondents.

Table 8: Decision Making

Category	**Frequency**
Autonomy	1
Hierarchical	3
Do not know	3

4.3.2 *When it comes to your users, do you have a way of knowing or sensing their needs?*

The respondents were asked if MTN had a way of knowing or sensing the user needs. This was intended to determine if there was a process or method of gathering customer data. For one respondent, an HR respondent, most of the technical questions were not applicable to his role and the response was that the question would best be answered by the technical respondents. The other respondent's response was omitted as it focused on the internal users, that is, MTN staff members, not MTN customers. The following table indicates the results from the respondents.

Table 9: Sensing user needs

Know consumer needs	Description	Frequency
Yes	Customer research	4
No	Relied on global trends	1
Not Really	Relied on global trends	1

4.3.3 *When it comes to technology, how do you determine which technology to introduce locally for the users/consumers?*

Respondents were asked how MTN decides which technology to introduce in the local market, whether they just followed international trends or whether they tailor the technology, based on their understanding of their consumer needs. One respondent mentioned that they rely on the technology team or group and this was the same for the respondent that represented HR. The following table indicates the results.

Table 10: Technology

Technology	Frequency
International trends	3
Base it on Consumer needs	3

4.3.4 *New ideas, how you generate, select, develop and implement new ideas?*

The respondents were also asked how MTN generates, develops and implements ideas. This was to determine if there is a process behind generating and developing ideas until they get commercialised, for those that make it to the market. This question cuts across the methodology or process used to generate and develop ideas and, at the same time, reveals some of the conditions that allows idea creation. The following table shows the results from the respondents.

Table 11: New ideas

Idea generations	Description	Frequency
Formalised process	Innovation portal was developed a year or two back to submit ideas, but did not last, it died.	3
No formal process	It's really a case of identifying an opportunity	3

	and presenting it to your boss or executive	
Development and Implementation	**Description**	**Frequency**
Formalised process	We have a defined product development process and value proposition design process. We have an area which we call EDI (ecosystem development and innovation) that area is basically responsible for coming up with very new technology products.	5
No formal process	So in absence of a tool you are reliant on custodians or mentors or even sponsors to pursue something further.	1

4.3.5 *Does your organization have a way of learning from the past projects and how does it derive these lessons for the future?*

Respondents were also asked how they learn from the past projects and if they have a way of deriving lessons learned for future projects. This question was aimed at determining if there are processes and systems in place in order to derive lessons from the projects. The following table indicates the results from the respondents.

Table 12: Learning lessons

Project lessoned learnt	Description	Frequency
Formal process	Well more recently we have been documenting things. We used to have a department called BOCE, which was business optimisation customer experience and that department had business analysts and project managers and program project managers. So they had the expertise in terms of helping the business launch or run and implement projects. So there they had their own platforms and processes to manage those projects.	4
No formal process	It's very organic, it's not documented etc. The more projects you work on, the more you build your experience	2

Don’t derive any lessons		0

4.3.6 *Does your organization do industry foresight and scenario planning?*

The industry foresight question was also posed to the respondents in order to determine if MTN looks at the horizon, understands what is coming on the horizon and then plans to be ready for it. Table 12 present the results from the respondents.

Table 13: Industry Foresight

Industry Foresight?	Description	Frequency
Yes	That is ongoing. On a daily basis, we are reviewing our strategy, adopting according to what we see the consumers want. I guess around June/July we start our business planning process for the next year and up to 5 years	4
No		0

4.4 Results pertaining to Research Question 2

Research Question 2: What are the conditions or factors that enhance or hinder innovation success?

This section of the research is aimed at determining the internal and external factors that influence MTN to be innovative. The idea is to determine the internal conditions of the organization and also look at the external condition, which is the regulatory body, ICASA, the technology suppliers or vendors and the competition. In order to get different views and a better understanding, one European supplier and one Asian supplier have been interviewed. This was done in order to understand different kinds of influence that are brought by the European technology supplier and the Asian technology supplier. The European supplier identified and interviewed is Ericsson and the Asian one is ZTE.

For this research question, several questions were asked to all respondents during the interviews in order to ascertain the conditions and factors that enhance or hinder innovation success at MTN. These questions are summarised in the following sections. The result of the each question is presented in a tabular format, indicating a theme identified during the content analysis. The theme and number of times with which that theme is mentioned is presented.

4.4.1 *What do you think about diversity, how important is it in meeting organizational goals?*

Since the focus of this study is about innovation at MTN, this question was posed to the MTN respondents. The respondents were asked about the importance of diversity, whether they regarded it as important or not important for their organization. The following table shows the results of the respondents.

Table 14: Diversity

Diversity?	**Description**	**Frequency**
Important	Look especially with MTN being a multinational, it is critical.	7

Not important		0

4.4.2 *Can you please tell me about the organizational culture, does it allow ambiguity, risk taking and tolerant of change?*

To gain insight about the organizational culture, the respondents were asked whether it allows ambiguity, risk taking or tolerance of change. The focus was on MTN for this question, since the research seeks to understand if MTN's culture is conducive to innovation and creativity. One of the respondent gave a response saying "sometimes", this was interpreted as risk taking and ambiguity is allowed, but under controlled measures. The following table presents the results from the MTN respondents.

Table 15: Organizational culture

Culture, does it allow ambiguity, risk taking and tolerance of change?	**Description**	**Frequency**
Yes	"In my area you work with a lot of ambiguity. The network group culture is also changing slightly, but it's always been one of 'can do', we always had a view of nothing is impossible. We take calculated risk. We look for ideas and we look for risk to be taken in coming up with those ideas. But I guess calculated risk	6

	as well is also required. We were very much task oriented, so we really pushed the boundaries when it comes financial performance and that's why MTN became almost an overnight success that it is. You can still allow them freedom but to a certain point. Because now you have more constraints as opposed to what you had before sometimes."	
No	"For me the CEO is the person in the organization that drives the culture. So for example our current CEO is all about cost cutting, that's the culture we have currently"	1

4.4.3 *How does your organization keep up with new trends in the industry? Do you attend conferences, trade shows or further education?*

Telecommunication industry is a fast changing environment. The MTN respondents were asked how their organizations keep up with the new trends. This was done in order to understand how they stay relevant in order to be able to deliver on the customer needs. The following table present the results from the respondents.

Table 16: Industry trends

Category	Frequency
Conferences & Learning	3
Market Research	1
Get informed by the technology suppliers	2
Individual learning	1

4.4.4 *Partnership, do you have partnership for developing new products or services? Local partnerships, international or universities?*

In order to determine if MTN engages in any collaboration in developing new products or services, respondents were asked if MTN has any partnerships, whether local partnerships, international partnerships or partnering with universities. The results are presented in table 16 below.

Table 17: Partnership

Partnership Category	Frequency
International (i.e. Qualcomm)	2
Local (Rorotika Technologies)	2

Universities (i.e. Stellenbosch)	3

Technology suppliers and the regulatory body plays a role in the innovation effectiveness of the network operators. In order to determine the influence of technology suppliers and the regulator on MTN's innovation, interviews were held with suppliers and the regulator. Interview questions were categorised according to the suppliers and the regulator. The following questions were posed to the respondents from the regulator.

4.4.5 *What is the strategy that you use to meet your organizational goals?*

The regulatory respondents were asked about the strategy they use in order to achieve ICASA's goals. This question was posed in order to determine the things they do in order to be effective, efficient and influential as a regulator to the operators. The following table shows the results from the respondents.

Table 18: Strategy

Strategy	**Respondent**
"Our guiding lever would be one of the pillars that we have within ICASA, is what we call promotion of competition. So anything that has to do with market reviews is designed to promote competition."	1
"Remember the strategy is decided by the council, which is our board."	1
"We tend to be guided and rely a lot on the strategy. We want to avoid conflict. Our	1

strategy needs to be aligned with the strategy of the organization. Basically what we do to go about our work is to improve our communication lines.”	
“Obviously there are five objectives of ICASA which have been divided into strategic objective goals. There is one that talks to promoting competition. There is one that is promoting broadband, there is one talking to consumer, consumer centric and so on and another one talking about efficiency and there is another one talking about innovation, how to promote innovation in the sector. Obviously it’s about resources, budget to the capacity in terms of the current staff we have, we want to beef them up, in terms of their competency to deliver”	1

4.4.6 *How do you as ICASA enforce creativity within the operators? What are the unique and original things that you do as ICASA that ensures operators are creative?*

The respondents from ICASA were asked how they motivate creativity within the network operators. This was intended to try and determine the unique and original things that the regulator does in order to stimulate creativity within the operators. The following table presents the results from the respondents.

Table 19: ICASA ensuring creativity

Creativity stimulators	Respondents
Competition - drive down prices, and increase the quality of services or products. Interconnection regulations - So our regulations “foster” that creativity and innovation	2
Offer Spectrum to conduct test and trials. Build industry forums for the purpose of future advancement of the deployment of multiple services.	1
Compliance enforcement	1

4.4.7 *How do you, as a department, ensure affordable & quality service for all South Africans?*

The regulator respondents were also asked how they ensure affordable prices and high quality of services for the South African telecommunication consumers. This question was posed to determine the things that the regulator does in order to drop the telecoms prices down to affordable levels for South Africans while also maintaining high quality service standards. The following table presents the results from the respondents.

Table 20: ICASA ensuring affordability & quality

Affordability & Quality Stimulants	Respondents
"From a quality point of service we have a quality of service report that is done periodically. We let the licensees know that this is their quality and they must improve. From an affordability point of view, the ECA allows us to look into both the wholesale market and the retail markets. So from the wholesale market, we look at the cost that operators incur and how much they charge each other for services. In the retail market it's a bit more difficult because it's so dynamic. But we do have the powers to also look at the retail market. We look at those things and say, are the prices being charged fair? For example, one of those pillars will be the call termination process (MTR's)."	1
"It's a team effort, we work with market and competition and engineering and technology divisions. We have a quality of monitoring service exercise. We also validate by asking consumers themselves about their experience, we have a research called quality of experience. So that we have as much as we have tested technically, we get the views and the	1

feelings of the users. On the price, market and competition have been involved in trying to look at the pricing of the consumers. So the market and competition did a survey to benchmark studies to compare countries and SA, and indeed it was found that we are expensive. So they have embarked on a program called mobile termination rates (MTR's)."	
"We will be publishing a discussion paper within infrastructure sharing and the main core of infrastructure sharing is to reduce the input cost of the operators in the deployment of those networks. Services can be provided at a lower cost because they are not spending too much on infrastructure."	1

4.4.8 *How do you stay abreast of the operators?*

In order to effectively regulate and monitor the industry, the regulator needs to be on par or even higher in terms of knowledge when it is compared with the network operators. So a question was posed to them as to how they stay abreast of the operators. The following table presents the results from the respondents.

Table 21: ICASA – staying abreast

Staying Abreast?	Respondents
"We are a member of the ITU, international telecoms union, we are a member of the WTO, world trade organization, and we are a member of the CTO, commonwealth telecoms organization. These are or tend to be forward looking organizations. Exhibitions or trade fairs, like your big ICT indaba in Cape Town. So that's how we keep abreast."	4

The next set of questions were posed to the technology suppliers or vendors, to determine their influence on the innovation capabilities of MTN. MTN has three vendors, two Asians companies, Huawei and ZTE, and one European, namely Ericsson. For this research, two vendors were interviewed, one Asian, namely ZTE and the European, Ericsson. The following questions were posed to respondents.

4.4.9 *What are the unique and original things that you do to ensure that MTN is creative & innovative?*

In order to determine how they help MTN be creative, original and innovative, both vendors were asked what are the unique things that they do for MTN in order for the company to be creative and innovative? The results are presented in table 21 below.

Table 22: ZTE & Ericsson – ensuring innovation

Vendor	Description	Respondent
ZTE	From our part we propose new solutions, new products, and new features to MTN for different departments.	1
Ericsson	Strategic partnership in terms of product development, where we co-develop a product and Ericsson takes it to the market and the rest of the world. Also introduce products and services to MTN networks	1

4.4.10 *Do you have a way of knowing or sensing South African user needs or that information comes from the operators and then tailor products according to those needs?*

In order to understand whether the vendors were proposing and developing products for the South African market or were they just launching international products and hope that they will work for our consumers, the question about tailoring products for South African market was asked. This was done in order to determine if they understand South African

consumers and if they do their own research before proposing a product to MTN. The results are shown in table 22 below.

Table 23: ZTE & Ericsson – sensing South African user needs

Vendor	Description	Respondent
ZTE	Most of them are based on international products, but for MTN SA we can do customization based on the requirements.	1
Ericsson	Some are international products and some are designed for the local markets. For example the LTE launch, no one in the world launch LTE for such a big prepaid base. Ericsson had to make sure the dynamic charging system will work fine when this was launched.	1

4.4.11 *What are the innovation initiatives that you do as a supplier to help MTN be operationally efficient?*

In the last year or two, the telecommunication operators engaged in price wars. The market really became competitive while, at the same time, the regulatory body was decreasing

the mobile termination rates. This meant a decrease in the network operator's earnings and required a more efficient way of running the business. The question was posed to the suppliers about the role they play in helping MTN be as efficient as possible. The following table indicates the results from the respondents.

Table 24: ZTE & Ericsson – influencing MTN operational efficiency

Vendors	Description	Respondent
ZTE	Regional strategy - vendors running different regions Due to congestion on 2G network. "We gave proposals regarding the operational efficiency. We are going to modernise the network, 3G and LTE. We are going to provide the equipment that is going to ease pressure on the 2G network and, give them vouchers on the equipment that we have provided to them to get 3G handsets. So those 3G handsets can be used to acquire new customers or upgrades, upgrading people from 2G to 3G. Even come up with a program that they can swap 2G for 3G handsets. That is	1

	one of the strategies to help them improve their efficiency."	
Ericsson	"Ericsson has a large global footprint, try to leverage on the lessons learned around the world. We have a very rich knowledge sharing culture and knowledge distribution culture. We bring those lessons learned to operators, it saves us money and saves operators money as well."	1

4.4.12 *How do you help MTN achieve these affordable & high quality services as operators?*

The respondent from both suppliers were asked how they help MTN achieve affordable and high quality services. The following table presents the results from the respondents.

Table 25: ZTE & Ericsson – Helping MTN on affordability & quality

Vendors	Description	Respondents
ZTE	Supply MTN with free equipment in understanding that when MTN grows, we	1

	grow together and make money together in the future. Let's take an example, based on our region, the Western Cape, before we swapped the quality was not good in Western Cape. The sites were very few, the region is very big, only 800 sites, so it's not enough. When you drive through the highway you drop calls many times, so the quality is very bad. So after that, this year we are busy with new sites and after that the KPI's will improve.	
Ericsson	From a Capex point of view, A lot of our products are in the MTN group price book. That price book is negotiated with MTN group. There is quite an aggressive discount, especially now with the competition. There is a lot of competition and price pulling down with the	1

	competition in the market place. For software, we have the software models very affordable. On 3G MTN pays for the utilized capacity on the network. It helps filter down on Opex savings. Also deferred capital days in terms of paying us, 90 days. From the Opex point of view, we have developed a lot of features in terms of power and energy savings equipment. The entire RBS is small in terms of size.	

4.4.13 *How do you stay abreast as a technology firm?*

The respondents were asked how their organizations stay ahead of the game, in order to remain competitive and be able to help MTN. The table below shows the results.

Table 26: ZTE & Ericsson staying abreast

Vendors	Description	Respondent
ZTE	"For ZTE we have all the products for telecommunication. It means that we can give a full solution from end to end to the operator. ZTE has 15 R&D centres worldwide. ZTE spends 10% of their total revenue on R&D."	2
Ericsson	There is a lot of R&D that we do. R&D spend is 20% of what we earn every year. I think what differentiates us, what keeps us apart the most is technology leadership. Also the strategic partnership we have in terms of development space. We also have a big presence in China and India that helps bring down our costs. And also helps us develop our managed services from a global support services. If we need to do something	1

	quickly we can scale up very quickly. So we got these global deployment and global development centres around the world.	

4.4.14 *How does your organization keep up with new trends in the industry? Do you attend conferences, trade shows or further education?*

The respondents were also asked how they keep up with the new trends. This was clearly evident from the question about staying abreast that both companies do a lot of R&D and spend a lot of money in trying to stay in the forefront of technology. Ericsson even mentioned that they produce publications, like the Ericsson Review and get universities to provide comments.

4.5 Secondary data

This section's data, tables and figures have been sourced from the company documents, reports, and financial statements.

4.5.1 *MTN culture survey*

MTN has recently embarked on annual cultural surveys. This is done in anticipation of the changing environment and high competition. According to MTN (2015), the environment that MTN operates in, both external and internal, is unpredictable and in order for MTN to remain competitive, they need to be able to respond rapidly to these turbulent times. In order to be able to do this, they have come up with the Cultural Operating Systems (COS). The COS is about new strategies, new thinking and new behaviours which will help the organization deal with the high competition and changing environment.

The following table indicate the results of the cultural survey done for the period 2013 - 2014.

Table 27: COS 2014 Results

COS 2014 Results	
• Not enough is done to deal with poor performance and a lack of accountability	• People still work too much in silo's
• Little formal recognition is given for teamwork.	• Leaders do not act on ideas and suggestions of staff.
• Little effort is made to get the opinions of staff through consultation and engagement actions	• Staff feel it is unsafe to speak up in MTN and fear repercussion.
• No opportunity is provided to give feedback before changes are made.	

Source - (MTN, 2015)

The following table indicates the COS strategic goals for 2015.

Table 28: COS Influence Strategies - 2015

COS Influence Strategies - 2015	
Source 1: (personal motivation- make the undesirable, desirable)	Source 2: (Personal ability – new mind-sets, skills and knowledge)

• Leadership communication and visible engagement • Positive and inspiring symbolic actions	• Develop vital behaviour (VB) mind-sets, knowledge and skills
Source 3: (social motivation- formal and opinion leadership influence) • Formal leadership accountability via Pulse, GCA and 360 measurement • Opinion leader support and mobilisation to drive culture change	Source 4: (social ability- find strength in numbers) • Develop teamwork and collaboration skills • Use cross functional teams for VB's and COS change plan activation
Source 5: (structural motivation performance and recognition) • Measure change and build commitment through reward and recognition • Recognise VB leaders and staff role models	Source 6: (structural ability- change the environment) • Integrate VB's into people and business practices e.g. tools, jobs, PPP's etc.

Source - (MTN, 2015)

4.5.2 *Financial Status and Subscribers*

The following table shows the financial income of MTN South Africa as reported in their financial results. This table shows a view of the last five years and the information is derived from the MTN Annual Financial Results, for 2014 down to 2010.

Table 29: MTN Income & Expenditure (Five year period)

In billions	Year 2014	Year 2013	Year 2012	Year 2011	Year 2010
Reported Income	38,9	39,7	41,4	38,6	35,8
Capital Expenditure (Capex)	5,6	5,8	6,4	4,1	3,9

Source – (MTN Group Limited, 2011, 2012, 2013, 2014)

The following table shows the number of customers (subscribers) that are covered or supported by the MTN South African network. The information in this table is derived from the MTN Annual Financial Results, for 2014 down to 2010.

Table 30: MTN Customers (5 year period)

In millions	Year 2014	Year 2013	Year 2012	Year 2011	Year 2010
Reported Subscribers	28,0	25,7	25,4	22,0	18,8

Source – (MTN Group Limited, 2011, 2012, 2013, 2014)

4.5.3 *Network coverage*

The following map shows MTN's network coverage throughout South Africa. It also indicates the type of network technology level available, like 2G, 3G and LTE through the country.

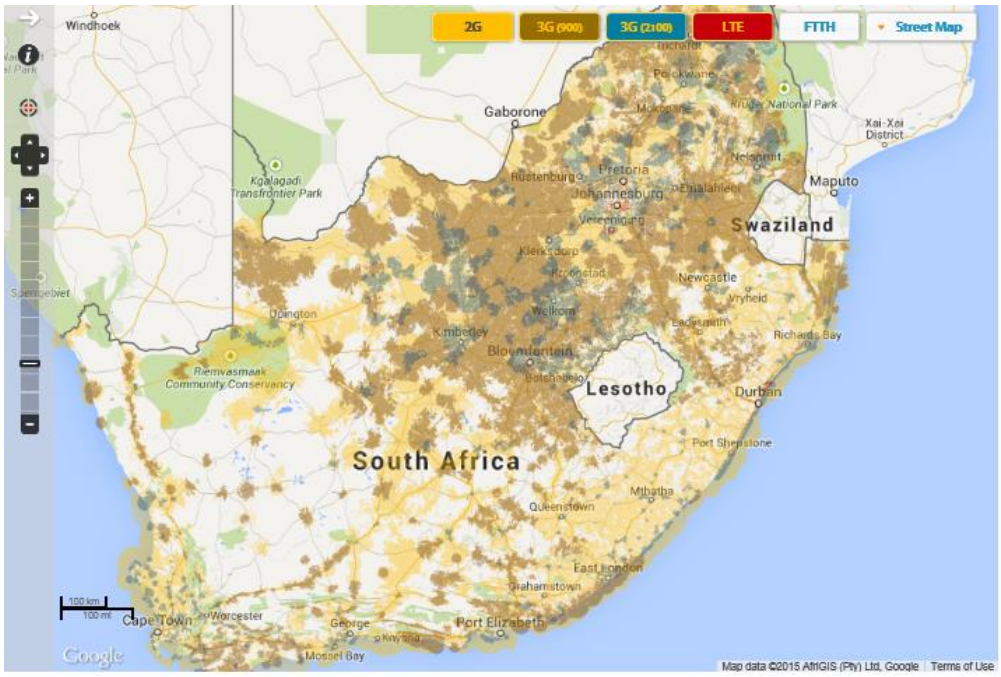


Figure 10: MTN Coverage Map. Source - (MTN (Pty) Ltd, 2015)

4.5.4 *MTN's Social and Economic Investment*

In Chapter 1, I mentioned that STEPS (2010) states that despite the large sums of money spent every year on R&D, thousands of children die from waterborne diseases, more people still go hungry, poverty and unemployment is still rife in poor parts of the world. In his 2015 State of the Nation Address, President Jacob Zuma mentioned the role that can be played by the private sector in helping revive the South African economy that has been hampered by the global financial crisis (Mail & Guardian, 2015). In response to the economic growth mentioned by the President and also the challenges stated by STEPS (2010), MTN has a corporate social investment vehicle called MTN SA Foundation. The MTN SA Foundation was established in 2001 with MTN's belief that communication plays a major role in economic development (MTN SA Foundation, 2013). MTN SA Foundation (2013) states that the foundation places a strong emphasis on the whole community development and sustainable impact on areas of education, health, entrepreneurship and arts and culture. The Foundation further mentioned that in the last five years, MTN SA committed resources to South African communities amounting to annual spend between 1% and 1.5% of net profit after tax (NPAT) and the bulk of this grant, which is 45%, was

allocated to education. The following table shows the foundation's income or grants in the last four years.

Table 31: MTN SA Foundation Income (4 year period)

In millions	Year 2013	Year 2012	Year 2011	Year 2010
Reported Income	67,9	64,1	60,3	48,2

Source - (MTN SA Foundation, 2013), (MTN SA Foundation, 2012), (MTN SA Foundation, 2011)

According to the MTN SA Foundation (2013), the following are some of their current projects: in education, the foundation's flagship is Schools Connectivity Programme, with establishment of 208 ICT centres with subsidized data, training of educators and learners. This programme has benefited 1455 educators and 84320 learners; in health, several programmes have been formed which promote prevention and early detection, such as health-screening and management of both infectious and lifestyle diseases. Other health initiatives includes telemedicine and health-education broadcast programmes. Entrepreneurship is one of the key factors in economic development and job opportunities. MTN SA Foundation (2013) states that the foundation has established Business Support Centres (BSCs) and small business fairs, providing support to entrepreneurs and job seekers. Also for Arts and culture, the foundation has established Craft Capacity-building Programmes, providing access to networks, marketing, and product development and production management within the creative industries. The table below shows the distribution expenditure of the grants regarding the focus areas and the projects.

Table 32: MTN SA Foundation project expenditure (4 year period)

Projects	Year 2013	Year 2012	Year 2011	Year 2010
Ad hoc project	2,0 million	40 000	3,5 million	5,7 million
Arts & Culture portfolio	7,6 million	7,5 million	5,3 million	5,4 million
Education portfolio	18,1 million	15,5 million	17,0 million	16,8 million
Entrepreneurship portfolio	14,3 million	15,3 million	9,8 million	6,6 million
Health portfolio	10,9 million	12,6 million	8,4 million	8,3 million
Special projects	11,7 million	7,4 million	7,3 million	9,9 million
Total	64,9 million	58,5 million	51,6 million	52,9 million

Source - (MTN SA Foundation, 2013), (MTN SA Foundation, 2012), (MTN SA Foundation, 2011)

4.6 Summary of the results

This section provides the summary of the demographic profile of the respondents and the key results for each research question.

The sample was made up of 16 senior respondents from the telecoms industry, some respondents from the government regulatory body, some from the network technology suppliers and also the network operator. These respondents have been in their positions between 1 and 10 years and the majority have significant telecoms experience, some with experience in excess of 10 years. The respondents are also well educated, ranging from a university degree to Ph. D level, with an exception of one that does not have a university degree.

The results for Research Question 1 pertains to the methodology or processes and systems that MTN employs in order to improve their innovation capability and outcomes. These are the methodologies or processes that enable organizations to be innovative, basically, dynamic capabilities. In order to understand MTN's dynamic capabilities, the following questions regarding decision making processes at MTN, the user information gathering methodology, processes regarding technology introduction in the local markets, processes of generating new ideas and methodology used to select, develop and implement those new ideas were posed to MTN's respondents in order to identify if the organization has ways of learning from the past projects and what processes are used to do that, and lastly if the organization has a way of preparing itself for the future. The results regarding these questions show that, of the seven respondents from MTN, only one mention said it is autonomous, three clearly stated hierarchical and the rest did not know. Regarding customers or sensing user needs, four mentioned that the organization does customer research. When it came to technology, it was a balanced split, three stating that they follow international trends and another three saying they base it on customer needs. Generating new ideas was also split in the middle, three stating that MTN has formal process and the other half saying MTN does not have a formal process. Regarding lessons learned from past projects, four stated that MTN learns from past projects. Also when it came to industry foresight, four stated that the organization engages in industry foresight.

Research Question 2 asked about the conditions or factors that enhance or hinder innovation success at MTN. These conditions or factors are the environment, both internal and external, that enable innovation in an organization. The results regarding conditions at MTN, show diversity at MTN, the culture, whether it allows ambiguity and risk taking, industry trends, if MTN keeps up with the industry trends, partnerships they have, both locally and internationally including universities, and the strategies used to meet the organizational goals. Of the seven respondents from MTN, all agreed that diversity is important. Six out of seven stated that culture allows risk taking and ambiguity. When it came to keeping up with industry trends, three mentioned that they go to conferences. Also with partnerships, four respondents mentioned that MTN have both local and international partners, including universities. The chapter also looked at the role that is played by the technology suppliers to help MTN be innovative and also the role and the influence that is played by the regulatory body in ensuring that network operators are innovative. The results are presented in terms of leadership experience, education, culture, diversity and all the other factors and clearly paints a picture of what is happening at MTN regarding what hinders or enhances their innovation.

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

The purpose of this chapter is to discuss the results that were presented in CHAPTER 4: PRESENTATION OF RESULTS. The discussion of the results is based within the context of this research study. Firstly, the demographic profile of the respondents is dealt with, looking at the actual sample versus the planned simple, indicating the impact between the differences, if there are any. Secondly, each research question is discussed as a separate section, looking at the questions that were asked of the respondents. Finally I conclude with key insights from the analysis, matching the findings to the Crossan and Apaydin (2010) multi-dimensional framework, which serves as the basis of the analysis for this research study.

5.2 Demographic profile of respondents

The respondents' demographics details were collected in order to determine and ensure that the respondents meet the criteria set out in the literature survey and fall within the boundaries planned in the CHAPTER 3: RESEARCH METHODOLOGY. The main aspect of the respondent selection process was:

- Respondent profile: All respondents were asked to provide their position within their respective organizations. Also the level of formal education, including experience, was required. This was done in order to determine the seniority and the role the respondents play in their respective organizations. As planned in the sample selection, these questions were important in order to exclude any respondent whose role was below the management level.
- Organizations: Since this research study is about innovation management at MTN, the South African regulatory body, that is ICASA and technology suppliers or vendors, namely, ZTE and Ericsson were also identified as major players in influencing the innovation management and capability of MTN. Therefore respondents from these organisations were also interviewed.

5.2.1 *Respondents Profile*

The goal for this research study was to interview senior respondents, managers being the minimum level. The first reason for this is that organizational leaders are the decision makers and strategy formulators in the organization. Secondly, leaders in the organization are the ones who create, influence and drive innovation culture. The sample achieved was managers and above, 13% holding manager roles, 37% being senior managers, 25% of general managers, 19% holding director roles and 6% being at an executive or CEO level. The following figure indicates the results.

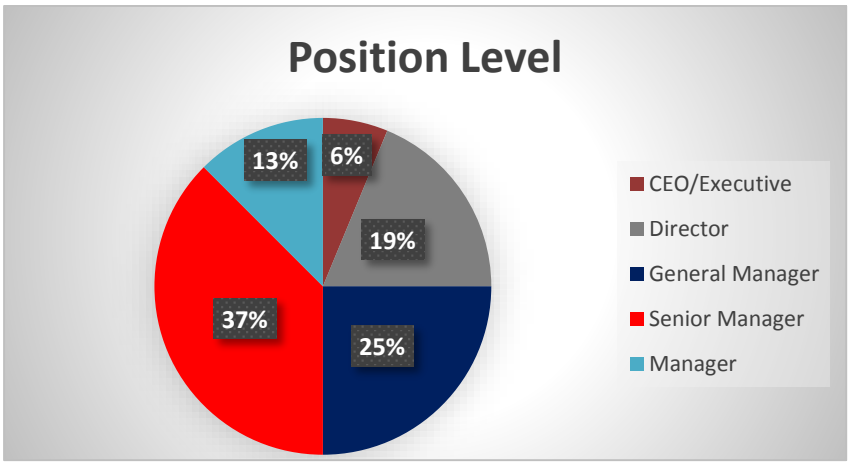


Figure 11: Level of position

The tenure of the respondents in these positions ranged from 1 year to more than 10 years, with the majority of respondents sitting in the range of 6 to 10 years. Figure 12 shows the tenure distribution across all respondents.

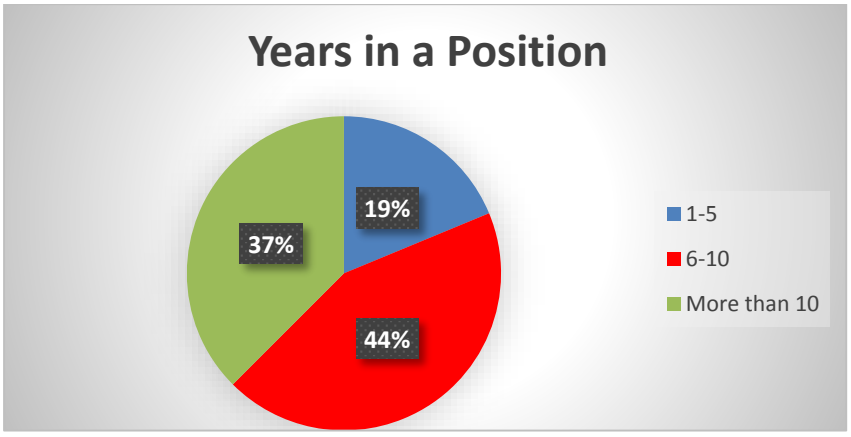


Figure 12: Years in a position.

Since education is also one of the aspects; the respondents were also asked about their level of formal education. The respondents' education distribution ranged from having no university degree to having a Ph.D., with the majority of the respondents having acquired a Master's degree. The following figure indicates this distribution.

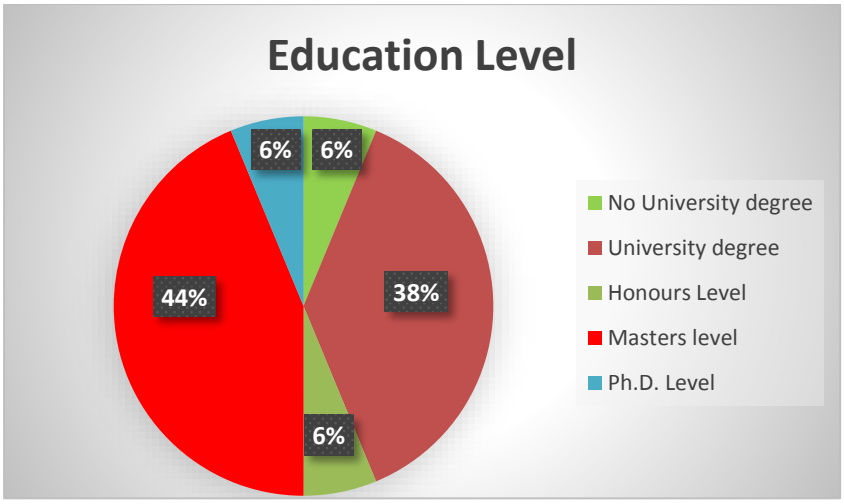


Figure 13: Education Level.

Lastly, of the respondents that were interviewed, the majority came from MTN due to the fact that the study is about MTN, trying to determine whether MTN is innovative and if it is, what the methodologies or processes they use to improve their innovation capabilities, and also what are the conditions that hinder or enhance their innovation success. The following figure indicates the distribution of respondents that were made available by their organizations to be interviewed.

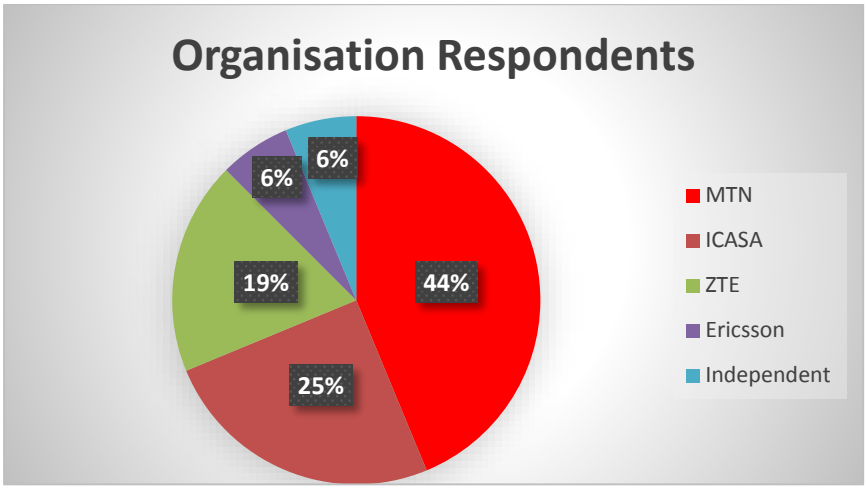


Figure 14: Respondents by organization.

5.3 Discussion pertaining to Research Question 1

The purpose of research question 1 was to determine the methodology or processes and systems that MTN employs in order to improve their innovation capability and outcomes. In order to answer this question, respondents were asked some questions in order to understand the business processes and some of the dynamic capabilities. The key aspects mentioned by the respondents were matched to similar themes within the literature review in order to determine commonality.

Table 33: Research question 1 - Literature theme matching (Reference with regard to framework)

Category	**Literature Review**	**Respondents**		
Decision making process	"Decision making technique - Promoting autonomy"	**Autonomous**	**Hierarchical**	**Varies**
		1	3	3

Sensing User Needs	"formal information gathering and customer contact time and frequency"	**Formal Process**	**No Process**	**Not Applicable**
		4	2	1
Sensing Technological Options	"The focus of portfolio management is on making strategic, technological, and resource choices that govern project selection and the future shape of the organization"	**International Trends**	**Based on customers**	**Not Applicable**
		3	3	1
Generation of New Ideas	"Usage of formal idea generation tools. The initiation phase includes awareness and attitude towards new ideas and concept generation. Innovation can be initiated in an organization either by generation or by adoption. The generation of innovation revolves around problem solving and decision-making related to the development of new products and processes. The adoption of innovation is a process of induction of organizational change from outside. Organizations may	**Formal Process**	**No Formal Process**	**Not Applicable**
		3	3	1

	engage in either one or both. As a result, an organization is said to have a portfolio of innovation projects."			
Selection, Development & Implementation of New Ideas.	"Formalized process of project selection. Development and implementation of innovation sequentially follows innovation generation or an adoption decision. Implementation includes trials and production. Commercialization includes market research. Budget for market testing. Marketing proficiency such as number of product launches."	**Formal Process**	**No formal Process**	**Not Applicable**
		5	1	1
Learning & Adapting		**Formal Process**	**No response**	**Not Applicable**

	"Evaluation of post-hoc project results. post-launch reviews"	4	2	1
Industry foresight and scenario planning	"The future shape of the organization"	**Yes**	**No response**	**Not Applicable**
		4	2	1

Source of themes: (Crossan & Apaydin, 2010)

The following paragraphs explain the meaning of the data in the table above. Each key aspect is discussed, based on the literature and the response from the respondents. The first key aspect in the table above is about the decision making process, the respondents were asked about the decision making process at MTN, whether it is hierarchical or autonomous. Out of the seven respondents from MTN, one said it is purely autonomous, three said it is hierarchical and also another three said it varies, meaning it could be either hierarchical or autonomous. In the literature, Crossan and Apaydin (2010), in their multi-dimensional framework of organizational innovation, state that one of the important factors which enables innovation is culture, the authors state that leaders must create an innovative culture which promotes autonomy. From the results, decision making processes at MTN are inconclusive, deadlocked between hierarchical and not knowing what to make of the decision process. The reason for this is because of the fierce competition that is taking place in the South African telecoms industry. The leadership seems to be caught in unfamiliar territory, some want control, hence the hierarchical part and some are not sure what process to enforce. This can be very confusing and frustrating for the employees as they will not know how to act when faced with a decision making situation, whether they have the right to make the decision or whether they do not have the right. This situation was not predicted in the literature review and might hinder freedom for innovation.

The next key aspect in line is sensing user needs. The respondents were asked if MTN had a way of knowing or sensing the user needs. Out of the seven respondents from MTN, four stated that they perform customer research and customer insights. Quoting one of the respondents “So insights go a very long way in terms of defining and understanding what our customers want and defining how are we going to meet their expectations and needs. We subscribe to a lot of research portals as well. As an organization, customer insights are key, which is why we have a research team focusing basically on customer focus.” In the multi-dimensional framework, Crossan and Apaydin (2010) mention the importance of knowledge management systems in enabling innovation and that includes customer collaboration and customer contact, formal information gathering. In this key aspect, MTN is closer to alignment with the literature review.

The next key aspect is sensing technological options. The respondents were asked whether MTN follows international trends when it comes to technology, whether they have a way of sensing technology options. Out of the seven respondents from MTN, the respondents were equally split, with three stating that MTN follows international trends and the remaining three stating that MTN looks at customer needs. The innovation framework of Crossan and Apaydin (2010) also looks at the collaboration with the suppliers, the importance of the external linkages and the quality of these linkages. Both ZTE and Ericsson mentioned this collaboration and the ability to customise products to suit MTN’s needs. Quoting one of the respondents from ZTE “most of them are based on international products, but for MTN we can do customization based on the requirements.” This kind of split, deadlocked between following international trends and equally looking at customer needs for technology options is good for MTN as it shows the commitment to both international trends and customer needs. This is still aligned with the literature review since both external linkages and customer information is important.

The generation of new ideas is the next key aspect. The respondents were also asked how MTN generates, develops and implements ideas. In order to get a better understanding, the question was split into generating ideas and followed by developing and implementing them. When it came to generating new ideas, out of the seven respondents from MTN, the respondents were equally split again, three stated a formalised

process which was initiated two years ago and subsequently died due to change in leadership and focus. The other three stated that there is no formalised process when it came to generating ideas. If an employee has an idea, that employee talks to the immediate manager or send it through email to the executive. Crossan and Apaydin (2010), in the multi-dimensional framework of innovation, state innovation enablers, knowledge management systems being one of these, include the usage of formal tools to generate new ideas. MTN is functioning differently when it comes to new ideas as they do not have formal tools for new ideas as the literature suggests. The success they have enjoying from the beginning might be the cause of not having or recognising and harnessing formal tools. As the competition tightens up, this area will need to be well defined and sustainable formal tools and incentives will need to be introduced.

With respect to the development and implementation of new ideas, out of the seven respondents from MTN, five of the respondents stated that there are formal processes for developing and implementing new ideas. Quoting one of the respondents “So being in marketing, I guess it’s our responsibility to always be coming up with new value propositions to remain relevant in the market and be able to compete. So we have a defined product development process and value proposition design process.” Crossan and Apaydin (2010) in their framework, state that innovation is about problem solving, decision making and development of new products and process. The authors also mention the focus on formalised processes of project selection and also state that trials must be done during implementation. For MTN, this is enforced also with the suppliers, one of the respondents from ZTE stated the following when it comes to implementation “Yes, sure according to MTN, before implementation we must do lab tests and then we must do trials and after that we can do implementation.”

The next key aspect is learning and adapting. Respondents were asked if MTN has a way of learning from past projects in order to derive lessons for the future. Out of the seven respondents from MTN, the majority of the respondents (four) stated that there are project managers and believe that there should be documentation regarding projects. Crossan and Apaydin (2010) mention project management as one of the key components in innovation, stating that formal project management tools should be used, including post-

launch evaluations. Though this area has four out of seven respondents stating that MTN learns from past projects, it needs major work, learning from past projects saves time and money. This suggests that MTN needs to improve on this and make the information available to everyone and easily accessible.

Industry foresight and scenario planning is the last key aspect for this research question. The respondents were asked if MTN does industry foresight and plan for what is coming in the future before it happens. Crossan and Apaydin (2010) state that the organization's future depends on the portfolio management which makes the strategic, technological and resource choices, and in turn, that manages the selection of the projects. Also the authors mention that the organization's competitive advantage depends on how effectively the organization manages its R&D. Out of the seven respondents from MTN, four of the respondents, think that MTN is doing industry foresight.

5.4 Discussion pertaining to Research Question 2

The purpose of research question 2 was to determine the conditions or factors that enhance or hinder innovation success at MTN. In order to answer this question, respondents were asked some questions with the aim of understanding the internal and external conditions and its dynamics that enhance or hinder innovation. Attempts were made to match the key aspects mentioned by the respondents to similar themes within the literature review in order to determine commonality.

Table 34: Research question 2 - Literature theme matching (Reference with regard to framework)

Category	Literature Review	Respondents	
Education	"Upper echelon theory suggests that composition and characteristics of the top management team (TMT) yield a stronger explanation of organizational outcomes than a leader's characteristics alone, including amount of education and age."	**University degree & Above**	**No University or Tertiary education**
		6	1
Tenure and Experience	"Upper echelon theory suggests that composition and characteristics of the top management team (TMT) yield a stronger explanation of organizational outcomes than a leader's characteristics alone, including tenure and experience"	**Less than 5 years**	**5 years and more**
			7

Diversity	"Upper echelon theory suggests that composition and characteristics of the top management team (TMT) yield a stronger explanation of organizational outcomes than a leader's characteristics alone, including diversity of background. Leaders create a learning environment by fostering the acceptance of diversity within the group"	**Important**	**Not Important**
		7	
Culture	"Another important factor which enables innovation as a process is organizational culture. Leaders create innovative culture by having a clearly stated, attainable, valuable shared vision, Promote calculated risk taking and motivation"	**Tolerate Risk and ambiguity**	**Don't tolerate**
		6	1
Industry trends	"The effectiveness with which an organization manages its R&D portfolio is often a key determinant	**Formal Process**	**No Formal Process**

	of its competitive" advantage. Formal information gathering."	6	1
Partnership	"Knowledge management systems that enable innovation include external linkages with universities and the quality of these linkages. Collaboration with suppliers."	**Yes**	**No**
		7	

Source of themes: (Crossan & Apaydin, 2010)

Following the same process as in research question 1 above, the following paragraphs explain the meaning of the data in the table above. Each key aspect is discussed, based on the literature and the response from the respondents. The first key aspect in the table above is education, the respondents were asked about their level of formal education, in preparing for the positions they are holding at MTN. The educational level of the respondents that were interviewed at MTN ranged from having no university degree up to the master's level. ICASSA and Ericsson respondents also ranged from a university degree up to masters, the independent respondent has a degree and the ZTE respondents ranged from honours to PhD level of qualifications. In the literature, Crossan and Apaydin (2010) state, in their multi-dimensional framework, that the organizational outcomes are defined by the composition and characteristics of the top management team (TMT) and this includes the amount of education. From the sample, six of the seven respondents from MTN have a university degree, clearly indicating that the majority is well educated.

The next key aspect is age, tenure and experience. In the literature, the framework of Crossan and Apaydin (2010) also mentions that the age, tenure and experience and extra industry ties play a major role in determining the characteristics of the top management team. All the management respondents that were interviewed from MTN are very experienced, their tenure ranges from 5 years and more, with the majority having

experience in excess of 10 years. Although the age question was not asked due to sensitivity, the respondents all looked relatively young, between the ages of 30 and 45 years old.

Diversity is the next key aspect that the framework emphasises in terms of importance in influencing the characteristics of the top management team. In the literature, the framework of Crossan and Apaydin (2010) state that diversity of backgrounds and diversity in terms of occupational background plays a major role in the characteristics of the top management team and includes leaders fostering the acceptance of diversity within the group. All the respondents that were interviewed unanimously support and stressed the importance of diversity within them and within their teams.

Culture was the next key aspect. The respondents were asked about the organizational culture, if it allows ambiguity, risk taking and tolerance of change. In the literature, Crossan and Apaydin (2010) mention that organizational culture is another important factor which enables innovation. The authors state in the multi-dimensional framework that leaders must create a culture that promotes autonomy, that promotes calculated risk taking and leaders must be tolerant of ambiguity. Although the current focus at MTN is about cost cutting, out of the seven respondents from MTN, six respondents stated that the culture at MTN tolerates risk taking and ambiguity. The respondents based their response from the past years and the history at MTN.

The next key aspect is industry trends, the respondents were asked how MTN keeps up with the industry trends. The majority of the respondents, six of the seven respondents from MTN stated that MTN has a formal way of keeping up with the trends. They mentioned that they attend conferences and design indabas and also they are trend setters themselves. Quoting some of the respondents; “And just on that we attend forums like user groups overseas. One in Stockholm in Sweden, one in Rome and one in Shanghai and what I found is that a lot of colleagues all over the world came to me to ask questions about what we were doing in SA. They were quite intrigued about how advanced we were which gave me some comfort that there is not much happening around the worlds that we don’t know about or we have not done, because I have had presentations from Vodaphone Germany to Australia Vodaphone to where ever, what people are doing is something we

already done or we are embarking upon." The other respondent stated the following "We attend, when you talking technology and mobile to understand what is coming up in the market, the mobile world congress, which happens in Europe, I know we have sent a few of our EXECS, GM's. The Africom, the last two happened in Cape Town, we have a lot of delegates that attend, mobile broadband conference, we participate in, the Design indaba, we are actually a quite a big sponsor. So we try and be in the market and be informed."

The last key aspect is partnerships, the respondents were asked if MTN has partnerships for developing new products and services. All the respondents stated that MTN has partnerships, local and international, and two of the international companies, ZTE and Ericsson were also interviewed in order to determine how they influence MTN to be innovative. The respondents also mentioned that they have partnership with one of the universities, Stellenbosch University. Quoting one of the respondents, "Yes we have, we had a partnership strategy where we partnered with industry, with academic and research institutes. From the company's business perspective we spoke to Huawei, Ericsson, Accenture, HP, and Qualcomm. From the research company point of view we spoke to CSIR. From the academic point of view, we visited all the universities, but we set up an agreement with Stellenbosch University. So I sponsored an MTN lab at Stellenbosch University. I have a link with them, I administer it. We sponsor six post graduate engineering students there, a mixture of engineering and IT students. When we see ideas that are too academic for us, we pass it on to them as topics for the students to look at."

5.5 Conclusion

The purpose of this study is to examine the innovation management strategy at MTN. In order to establish this, the research attempted to determine two key aspects of innovation:

1. Determine the methodology or processes and systems that MTN employs in order to improve their innovation capability and outcomes
2. Determine the conditions or factors that enhance or hinder innovation success at MTN

A sample of 16 respondents were interviewed in order to understand the methodologies and conditions at MTN and also the roles that are being played by the regulator (ICASA) and the technology suppliers, in this case being ZTE and Ericsson, in enabling or hindering innovation at MTN. The respondents were engaged because they met the criteria set out for this research study with their level of knowledge, position and experience. The respondents were chosen in order to get a balanced view for this study.

The key characteristics that were assessed in order to determine whether MTN was innovative or not were the internal processes or methodologies, internal conditions or internal environment and external factors that influence or hinder innovation. Although the situation at MTN seems to indicate that the emphasis is on the bottom line and shareholder value creation, there is some indication of strategic intent to remain competitive and be able to rapidly respond to these turbulent times.

Although there is an indication of lack of formal processes or methodologies in place, the results show that MTN is an innovative organization. There is a lot of alignment and similarities between the framework and the data gathered from the respondents. When it comes to the internal environment or conditions or factors that enable innovation, the interview results confirm the key factors identified in the literature review, the leadership is experienced, well-educated and relatively young. Diversity is embraced, culture is tolerant of ambiguity and risk taking.

When it comes to internal methodologies and processes, the interview results show that there is a lack of formal methodologies or processes, on decision making process,

technology options, generating new ideas and learning from past projects. This is also supported by the secondary data obtained from MTN, the cultural operating survey (COS). Although the results obtained from the MTN respondents indicate that MTN is tolerate of risk taking and ambiguity, there is a disconnection between the leadership interviewed and the results of employees from the COS 2014. In the survey, the employees indicated that there is still a lack of collaboration, people still work in silo's, little formal recognition is given for teamwork, little effort is made to get opinions of employees through consultation and engagement actions, there is a lack of processes for poor performance and accountability and a lack of processes to give feedback on changes made. This disconnect could that the respondents based their answers looking the history of MTN, not a static period and have been at MTN for many years. The employees in the survey could be a mixture of new employees and long serving employees and could be basing their answers on a single year, as the survey is done on an annual basis.

In order to determine external factors or conditions that influence innovation at MTN, suppliers and the regulator were interviewed, trying to determine the operational conditions set out by the regulator and the support MTN get from the technology suppliers to be innovative in these conditions. First and foremost ICASA set up licence terms and conditions which stipulates that MTN must cover all South Africans with their mobile network infrastructure, rich and poor, and also people with disabilities, profitable and non-profitable areas must have telecommunication services. Secondly, it oversees the regulations and policies, spectrum regulation, mobile number portability (MNP) and mobile termination rates (MTR), just to name a few.

These are some of the regulations that affect MTN and force it to be innovative. Mobile number portability makes it easy for customers to switch between network operators and still keep their mobile number. Previously network operators used to be protected for their given number range, meaning if a customer was unhappy with MTN for instance and if they want to leave MTN, they could not leave with their mobile number to another network operator. This prevented customers from leaving, in fear of losing the number and potential loss of business as a result of losing the number. Now this is the thing of the past, customers can leave at any moment and still keep their number. This has forced network

operators to be more innovative and efficient to make sure they keep their customers. The second part is MTR's, the regulator has reduced the amount which network operators charge to carry another network's phone call. This has affected revenues negatively and forces MTN to be innovative and come up with other means of supplementing the lost revenue due to MTR's. The third regulation is the infrastructure, MTN is having challenges with the efficiencies of getting infrastructure from the regulator. As one of the respondents from MTN said "So generally you rollout a new technology when you get an allocation of new spectrum. Because of let's call it retarded policies and processes run by the DoC and ICASA in this country. We are on the back foot in terms of allocation of resources, that being spectrum to be able to rollout new services. The fact that the country need those services rolled out is not changing. So we have taken the decision to use engineering principles, what we re-farm spectrum. So we have taken away some spectrum from GSM, clean the GSM up and use that spectrum for LTE." This clearly indicates the innovative methods MTN had to come up with to deal with the challenges from ICASA. These regulations and policies clearly have had an effect on the revenues, which clearly dropped from 41.4 billion in 2012 to 38.9 billion in 2014.

Lastly with respect to the external conditions, suppliers play a major role in making sure that MTN is innovative and competitive. In trying to meet the license terms and conditions and cover all South Africans, MTN is faced with rolling out infrastructure in some of the challenging terrains this country has to offer. Hart and Christensen (2002) state that organizations can generate growth and satisfy social and environmental stakeholders by using "great leap" to the base of the economic pyramid, where many people still want to be part of the market economy for the first time. This will help the organizations find growth markets for the future while lifting people out of poverty. The authors further state that this is where organizations can best develop technologies that are needed to address social and environmental challenges that are associated with economic growth.

In order to do this, MTN really needs to invest in rolling out infrastructure in some of the challenging terrains this country has to offer. This requires lots of innovative ways and efficiencies to make sure that this is done within reasonable cost. MTN relies on the technology suppliers to make sure they have the right technology at the right cost for these

kinds of environments. While the capital expenditure has gone down from 6.4 billion in 2012 to 5.6 billion in 2014, the network coverage has increased and has added new features and services, 2G to LTE, covering the entire country as clearly shown in the coverage map figure, reaching a population of 28 million people in 2014 from 18.8 million in 2010. This network infrastructure rollout included also rolling out some social uplifting projects that are run by MTN foundation. Spending between around R67 million in 2013, on education projects, health, arts and culture and entrepreneurship, is a key factor in economic development and job opportunities. R67 million is by no means adequate for the challenges faced by South Africa, but it is a step in the right direction and will go a long way in contributing to the economic development of the country.

Although MTN might lack formal innovative methodologies and processes, the data and the results presented clearly show that MTN is innovative and other organizations can learn and benefit from MTN.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter present the conclusions of the findings and analysis carried out in this research project. The first part provides the summary of the findings and the conclusions of the study. This is followed by recommendations on the significance of the results, and finally it provides suggestions for further research.

6.2 Conclusions of the study

In today's ever changing world, organizations operate in a highly competitive environment, with shareholders demanding value creation. In this highly competitive environment, South African organizations are also faced with more challenges, with weak economic conditions, and the rand being too volatile against major currencies. This creates major financial challenges for South African organizations like MTN since most of their network equipment used is imported from European and Asian companies. The volatility of the oil price is also exacerbating the pressure, resulting in high fuel prices and high food prices and leading to a fierce competition for the wallet share.

During these tough times, organizations respond by cost cutting and MTN is no different, they have done just that. In the last three years, MTN revenues have been dropping, from R41.4 billion to R38.9 billion as shown in Table 28 and MTN responded by cutting costs in this situation. According to (Agency Staff, 2015), MTN laid off 476 staff members in 2014 and as of May 2015 they are planning to lay off another 578. Table 28 also shows that in the last three years they have also cut down on capital expenditure, from R6.4 billion to R5.6 billion. Also quoting one the respondents from MTN, "our current CEO is all about cost cutting, that's the culture we have currently, that we as managers are trying to enforce to everyone. It's all about cost cutting." Cutting cost is a short term solution, the revenues will look good because of cost cutting, but for the long term this might be a disadvantage since the organization has slowed down on investments and has also lost skilled staff.

In order to survive in this fierce competition for the share of wallet, organizations need something unique, something that sets them apart from their competitors and give them that competitive edge over their rivals. Innovation is one of those tools that helps organizations have that competitive edge. In order to understand what type of innovation to embark on, Christensen and Overdorf (2000) state that the organization needs to assess its capabilities, which is its resources, its processes and its values.

This research has identified the following key aspect. Innovation at MTN is not part of the corporate strategy, hence there are no methodologies or processes and systems and budgets in place. Employees at MTN do innovation on their own because of their own nature and drive to succeed, thus the company benefits from that. Innovation needs to be part of the corporate strategy to ensure that all levels of the organization are working towards a common goal.

The key to the success of an innovation strategy is having support from top management, the CEO realising the value of being innovative and not only focusing on cutting costs. The empowerment of all levels of the organization is key, by putting in place methodologies and processes such as budgets, systems to capture new ideas, partnerships with other organizations and institutions of higher learning and culture that allows risk taking, to mention just a few will encourage and enable innovation. The independent respondent mentioned that support from top management with budgets and partnerships are some of the key aspects for innovation success. The study has also identified that although the conditions at MTN support innovation, there is a lack of methodologies or processes and systems in place that support innovation. Unlike in ZTE and Ericsson, where a certain percentage of the annual earnings is budgeted for R&D, at MTN this is not happening, resulting in a lack of sustainable R&D labs for testing and developing new products, lack of systems to capture new ideas and lack of incentives for employees to come up with new ideas. This is due to limited support from the CEO, the MTN respondent stated that the focus is on cost cutting and not innovation. The other key aspect which is critical in innovation is pace, one of the respondents from the suppliers identified one of their challenges at MTN as the lack of pace. The results show that this is due to the lack of explicit processes, particularly decision making processes.

The results were conclusive in showing that MTN is innovative but lacks sufficiently clear processes. The lack of methodologies or processes and systems suggest that MTN employees are still limited when it comes to innovation and also technology suppliers are also limited and will face challenges when it comes to innovation. This may be attributed to lack of support and drive from the CEO in the current climate. Adequate support from the CEO can help in developing sufficient systems which are vital in managing and generating of new ideas, research and development and with proper learning channels and knowledge sharing with the suppliers.

6.3 Recommendations

The study results suggest that innovation may not be used to its full potential and benefits at MTN. MTN is encouraged to investigate the strategic value of innovation and make objective decisions about how they want to implement and incorporate innovation into the corporate strategy, and the benefits they will realise from innovation. One of the recommendations is to ensure that innovation is recognised and driven from the top, with proper processes and systems in place. In order to make sure that this does not change or lose support with the change of CEO, and since the current executives are more focused on operational matters, a Chief Innovation Executive (CIE) could be hired to lead innovation at MTN, someone who will report to the CEO and be responsible for driving innovation, setting up the right culture, developing methodologies, processes and systems, and who has a budget to achieve these objectives, including R&D centres.

This will ensure that MTN does not miss out on the opportunities of new ideas and the pace at which it is needed to implement those ideas. Also it will ensure that MTN is always one step ahead of its competition and closer to their vision “To lead the delivery of a bold, new Digital World to our customers”. The Chief Innovation Executive recommendation will mean that the executive structure at MTN will look like the following:

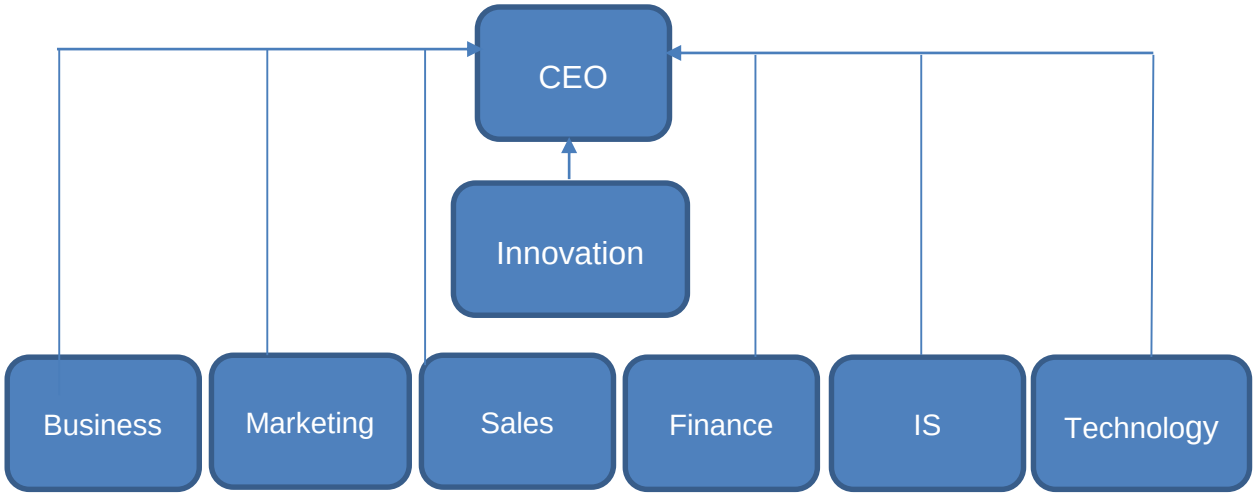


Figure 15: Recommended executive structure.

6.4 Suggestions for further research

The research process highlighted two main areas that could add to the knowledge in this particular discipline:

1. *A comparative study between a state owned organization, i.e. Telkom and a private organization, i.e. MTN or Vodacom.*

   State-owned organizations and privately-owned ones have different mandates, state-owned firms are driven by government objectives, being service delivery and privately-owned firms are driven by shareholder value creation. This kind of study can help shed some light on the innovation models used by these organizations in order to meet the stakeholders' interest in one case and shareholders benefit in the other case.

2. *Investigate ways of measuring innovation success or failure in an organization.*

   One of the challenges that came up during this research was measuring innovation success or failure. Innovation initiatives can take a long time, from the generation of the new idea until product development and commercialization. The difficulty that is facing managers is how to measure the performance of employees, since most

of the work in the beginning is intangible until a product is developed, and also there are no guarantees whether the product will be a success and generate revenue.

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Appendix A – Letter to Respondents

Dear Sir or Madam,

I am an MBA student at Wits Business School in Johannesburg. As part of the requirements for the degree, I am doing research on “Innovation management strategies in high technology firms in South Africa”. As I gather data for my research, I would be honoured to obtain your perspectives on how your firm organises itself in order to be more innovative and what opportunities and challenges it faces in doing so. I would be grateful if I could speak with you for about 30 minutes and certainly no more than 45 minutes in a face-to-face interview with you to gain your insights on some of my questions.

Confidentiality will be observed and the final report will be for academic purposes only.

I will be available to meet with you at your office, at any day and time of your convenience from now until December 20, 2014. Should you have any additional questions about the nature of this project, you may contact my research supervisor through the details copied below.

Dr. Diran Soumonni, Senior Lecturer, Wits Business School

Tel: 011-717-3646

E-mail: Diran.Soumonni@wits.ac.za

I understand that you have a busy schedule and thank you in advance for your kind consideration.

Yours Sincerely,

Themba Sikampula

0832129988

TSikampula@gmail.com

Appendix B – Interview Questions - management

Name: Job Title:		No. Of yrs. in this Position:
1. Introduce yourself and your role		
2. Can you please tell me how you prepared yourself or what prepared you for this position in terms of experience and formal education?		
3. What do you think about diversity, how important is it in meeting organizational goals?		
4. How is the decision making process in your organization, is it hierarchical or it allows for decision making autonomy within departments?		
5. When it comes to your users, do you have a way of knowing or sensing their needs?		
6. Can you please tell me about the organizational culture, does it allow ambiguity, risk taking and tolerant of change?		
7. When it comes to technology, how do you determine which technology to introduce locally for the users? Do you follow trends or come up with your own technology based on your user?		
8. New ideas, how you generate, select, develop and implement new ideas?		
9. Partnership, do you have partnership for developing new products or services? Local partnership, international or universities?		
10. Does your organization have a way of learning from the past projects and how does it derive these lessons for the future?		

11. Inclosing sir, does your organization do industry foresight and scenario planning? To understand what is coming on the horizon.

Appendix C – Example of transcript – MTN

Interview Recording Notes: V173 Date: 19/01/2015

Introduce yourself and your role

I am the GM for Radio planning and Optimisation at MTN SA. What that entails is I am the custodian of what we call the radio network or the Access network, the planning and the strategic planning there off and the optimisation and improving quality for the customer. That pretty much explains my role in very high level.

What's your understanding about innovation?

For me innovation is quite broad, it's basically taking something that exist apply a new wave of thinking, something that's fresh, something that perhaps unique to something that exist and making it better. The component that's new, that's fresh, that's creative that is what I would define as innovative. It stems across developing a new product, something physical, to perhaps coming up with new ideas in terms of redefining a process or procedure. The end goal being having an end product or an end processes that is a lot more efficient, lot more effective and create, let's call it a stakeholder value.

Can you please tell me how you prepared yourself or what prepared you for this position in terms of experience and formal education?

Ok so, I worked at MTN from the time of finishing university, my under graduate degree, which is engineering electronic, started off as a graduate engineer here, so I have got pretty much 15 years of radio planning and optimisation experience, which puts you in good stead because you get really to understand the technology part of the business and radio planning and you become closer, lets call it an authority to the subject. What equipped me to be more of a GM material is not only understanding network group and radio planning and optimisation, but it's understanding how what you do fits into the picture, understanding other aspects of the business , in fact I would say a GM in this organisation should have a comprehensive understanding of the business. You don't need to understand to the end degree in detail but you don't need to know how things fit together. What probably was a catalyst for me was an MBA, which then opens your mind to other components, other than just technology, you have a marketing aspect, you have economic aspects, you have financial aspect, you have a human resource aspect and these are all little holes that got plugged via the MBA which is adds impetus to your knowledge of how organisations function. What you find is you can then influence across the spectrum, because you are now using your ability to think, rather than perhaps what you work with, so logic plays a huge role, if you combine engineering principles and management experience, I think it's probably a winning combination.

Did you have a mentorship or you came from a business orientated family background?

No, I think now we find more people having mentorship, which I think it's a good idea. In fact I am a mentor to other people. But personal I never had a mentor and I don't have an approved mentor, I would seek knowledge informally not via a formalized way from observing people, from observing how people conduct themselves, from understanding situations and that kind of fed to towards me in terms of how I should grow and what makes more sense. But I think the formalized approach of having mentors and protégés is really good, because it kinds of fast tracks that process because not everybody maybe proactive. It creates structure which I think it's good

What do you think about diversity, how important is it in meeting organizational goals?

I think diversity is very important, I am a firm believer that we should create equal opportunities for everybody… On that, I think is very important. You can't have everybody that thinks the same way, otherwise you will have multiple blind spots. For example what I would discuss with my team is you want to get an opinion even if it's a technical problem. You frame the technical problem into something that is logical or can be explained to a layman, cause what you will find is the best ideas, the most profound ideas that actually helps to solve the problem, comes not only from the people that are closest to the problem, comes from the people that are furthest from the problem. They may not even realised that this is a problem because they have a much more global perspective of what the issue is. When you are so close to it you can only see one thing, you need to take a step back, couple of steps back in fact to absorb a lot more, which is not the easiest thing to do because you get caught up in work and you in the fire and you just continue. So in that environment it's good to have people with multiple different backgrounds because it lends itself to have a comprehensive view on the potential solution for a problem and it's not just one solution that solves the problem, it's multiple ways to skin a cat. The important thing is to acknowledge all the ways and choose the best way and that's where diversity comes in.

How is making process in your organization, is it hierarchical or it allows for decision making autonomy within departments?

I guess my style is I am a firm believer of empowerment. My view is the high up you move in an organisation, the more you have to work through people, rather than having to do every single thing yourself, because now you are responsible for multiple things. So surrounding yourself with good people is a precursor prior to empowering those people, but I like to surround myself with clever people, empower those people to make decisions and then have an understanding of the impact and advise. So I guess I will call it situational because there does come a time were consultative does not work, but you need to be flexible enough to understand the requirements as to when a decision needs to be made by a single person, because of maybe time constraints, because of maybe there is too many different derivatives of what the solution or the decision needs to be and the leader needs to take upon himself to make a decision. But making decisions without

consulting, without getting some sort of understanding from a diverse perspective which takes us back to the previous question is not a good idea, it's really not a good idea and that's where you fine more decisions in judgement or a decision is taken that works, but not in the best possible way.

When it comes to your users, do you have a way of knowing or sensing their needs?

I guess I would say yes, we regular surveys that are done by independent authorities, which not only measures the customer experience or their sense of satisfaction with MTN service, it also get a view of what they would prefer, that's in a very formalised way. In an un-formalised way, you find that we all part of the service industry, we part of the fast moving consumer goods, there is a common thread behind what a consumer wants in a fast moving consumer industry, ok, especially when it's service oriented. There is a research that is done into the trends or ICT trends in other parts of the world, specific focus on the bricks nation which is our peers and how we should bench mark ourselves against, so if you look at certain ICT trends as an example, there is a mass focus on broadband rollout, because I think broadband is seen as catalyst not only increasing level of socio economic development is also, the study that was conducted by the ICU shows that every 10% increase in broadband penetration, there is a 1.8% increase in GDP, in your gross domestic product for your country . How does that happen, well, it's quite simple, if you now take broadband, let's call in the South African context to rural environments, what are you facilitating, you facilitating a system where you make the lives more efficient and more effective, so the student, the pupil has access to a wealth of information, via the net, without having to physically go to the library, perhaps which may not even exist. They can connect with people in urban areas and have discussion of problems. So creating a global community in an education system as oppose to pupil living in rural areas don't benefit from what people living in urban areas get. How do we bridge that digital dived? In my view broadband, rollout of broadband is one of the ways, you can, let's call it traders, you can create an ecommerce platform using perhaps mobile banking as an opportunity to transact without physical cash, which creates an element of safety, so people do have money lost, because you have another level of protection. So you use all these, broadband being a catalyst. So without a doubt, we have an understanding looking at trends, where we fail perhaps is our ability to execute and that's where the focus is moving forward.

Can you please tell me about the organizational culture, does it allow ambiguity, risk taking and tolerant of change?

So there is couple of things build in that question, so let's start of with culture. So culture in this organization at this point in time is not standard. So a culture that exist in a department is deferent to one that exist in another department. A culture that exist in a team in a department is different to one that exist in another team in the same department. I guess it comes down to the leader that runs a particular department or a particular business unit. If I speak specifically to network group, I don't want to comment on the culture of the organization because we going through a transition and in essence we trying to find ourselves on the back of some big decisions that were taken last year that had an impact on people. So the company is still

trying to find itself. We have put down what we would like it to be but writing it down means nothing, you must live it to mean something. Let's talk about network group, the network group culture is also changing slightly, but it's always been one of "can do", we always had a view of nothing is impossible, we always made a plan, a typical of South African cliché. With regards to innovation, it's always been a common tread in the culture of network group, because by making a plan, you are in a fact, it's a, let's call it a phrase that describe creativity and innovation in my view, making a plan. So it's always been a common tread in network group from, I guess from the inception of this organization. In my department, the culture I like to create here is one of, I always tell my guys you should consider yourself internal consultant to this entire company. One because you should never limit yourself in terms of your sphere of influence. Influence and thoughts and ideas is not limited by where you work and what you do, it's only limited by how far you can think, what you able to discuss and talk about, that's why it ties back to your initial question about what successful in terms of progressing at a GM level and I spoke about at a GM level you should be able to influence multiple components of the industry and understand the business. I am just taking that to another level in my team and asking them to do that upfront now, it just puts them in good stead for progression in their own carrier path, whether they remain in this organisation or not. So we like to be extremely through in what we do, but we also don't just bury our heads in the sand and just think radio planning and optimisation. We think about multiple things, sales, marketing, finance, business models, mergers and acquisitions. Limitation is just in the mind and the one thing that I learned, when I did the MBA, perhaps you will find the same, your mind opens up and you think of things in different ways, ways that you never thought of things before, which doesn't mean you have to do an MBA to get to that point. I am just trying to, whatever I got out of it I am to disseminate that knowledge to the team, explain to them what I went through, those that are doing it will benefit and those that are not can still understand

Sort of a mentor to them?

Yes, and focus a lot on EQ as well as IQ, because you will find the smartest engineer, the smartest person in this world may have issues and may not be able to fully realise that benefit because of the limitations on how they interact with people. The perfect balance is to be smart and have charisma to be able to interact with people because then you are able to establish a good rephol with somebody, which then builds a relationship and if you have a relationship if I have to use an analogy, that strong, for me that's a strong link which allows you to send information through that link and it will be received in a very positive way on the other side. The relationship and the work on creating a relationship should not be superficial, it needs to something of substance, which creates a stronger bond, only when you have that stronger bond are you able to influence because there is more reception on the other side, it's not a wisest guy telling me this and I think it's important for us to have the EQ to be able to understand these things, no matter about having as much IQ as you can, you know for a fact some smart people you can't work with them. I have a bunch of smart people in my team I just want to make sure they understand the EQ component, what is on my mind,

the more you move up, more you enhance that EQ, because you dealing with people at the end of the day, you have to work through people and it's never too late or too early to start that

Since you recognise people are you most important asset, how do select people when hiring?

So, I don't sit interviews all the time, but I told the guys in my team that when we appoint, we appoint somebody that has what it takes from a technical perspective, but also fits into the culture of our department. If they don't fit into the culture, no matter how smart you are, you will not function in this, I will rather take a balanced person who has less knowledge but the culture is receptor of how you function and how you will grow. Bringing people in and just looking at one view and not the other is not a good idea. So we proud ourselves on ensuring that we focus on culture, I also focus on person's thinking capabilities, not necessary what they know but how they think because anybody can a pickup a book memories some technical jargon recite verbatim to you which ticks all the boxes, but let's ask them an abstract question that is not technical but it takes you through their thinking process and you can almost understand what this guy is drawing on, in how he answers your questions, it's more important to me, how people think, not so much on what they know.

When it comes to technology, how do you determine which technology to introduce locally for the users? Do you follow trends or come up with your own technology based on your user?

So, to be honest Themba, I would say we are quite of a trend setter in terms of what we do, there is things that we have done and are embarking upon in this network that the most mature networks in Europe and States have not even started doing. So I will just talk you through some of the things. Firstly we have rolled what we call LTE, which I would say only a quarter of all networks in the world have rolled out. We have done it in way that is probably only represents only 5% of the world's network in terms of how they have done it because we have re-farm spectrum. So generally you rollout a new technology when you get an allocation of new spectrum. Because of let's call it retarded of policies and processes run by the DoC and ICASA in this country. We are on the back foot in terms of allocation of resources, that being spectrum to be able to rollout new services. The fact that the country need those services rolled out is not changing. So we have taken the decision to use engineering principles, what we re-farm spectrum. So we have taken away some spectrum from GSM, clean the GSM up and use that spectrum for LTE. So we have done it on 1800, on the 1800 band, which is predominantly used for GSM. We have taken away some spectrum there and deployed LTE. The benefits are multiple because in the same block of spectrum on GSM, if you look at spectrum as a resource that you want to maximise revenue on, just remember that. I have got a block of spectrum, on GSM I carry this amount of traffic, let's call it X, on LTE the same block of spectrum I can carry 8*X. What does that mean, it means I can reduce my margins by 8 times and make the same amount of revenue because I can carry more traffic on the same resource or I can keep my margins the same and carry more revenue and make and 8times the amount of revenue on the same block all things being equal, which then creates more capacity, at the end of the day I am creating more capacity trying to be efficient in

how I use my spectrum which is a priced commodity. The precursor for that is having a device that can actually use that technology, because I can't rollout LTE as example in area where nobody has LTE capable device, because then I am wasting spectrum. It's a balance between network technology roll out and device evolution and device penetration. In the network as it stands off all devices that sits on MTN only 30% of the devices are 3G capable. The rest are 2G only devices. So we need the penetration of 3G devices to go up and LTE devices to go up. I guess the sensitivity surrounding that comes down to LCM bands and price point. So how cheap can we make the device that it cuts through lower LCM band, so whether they buy a 2G only device or a 3G smartphone, they not going out on pocket and if they are, the creativity that we would adopt is that we would subsidize those handsets. Why would I subsidize it, simple by just paying a small amount of subsidizing it I have an opportunity of carrying 8times the amount of traffic in the same block of spectrum. I am paying for 8times the capacity by just a small subsidy. If I don't subsidise it, it would physically need to install 8times the capacity to be able to carry that amount of traffic. So it comes down to a business decision which is combine with network and marketing. That's why it's important to understand the business, because you can make a decision that influence marketing on a subsidy that may not wanted to do because by doing that subsidy we save on Capex on network. So it's a comprehensive understanding of the business.

New ideas, how you generate, select, develop and implement new ideas?

I guess there is different ways, so if you look at new ideas linked to product innovation, I think there is a formalized way that's run by the marketing team. They have structured themselves into a design, build, operate model. In the design forum, that's where new ideas gets harnessed and cultivated and get put through its pace to understand if it is viable enough to become a new product, obviously they will look at business cases and align it with customer expectation, perhaps from the research that I spoke about earlier or perhaps it's a differentiator in terms of putting something out there that does not exist in the market. So that is on the product innovation very formalised. I can't speak for other departments, but in my department I don't have a formalised way of how new ideas are cultivated. But we always and I am always telling the guys to always think of different ways to do things that adds efficiency and effectiveness. So it becomes a cultural thing, it's not just a, ok I have a new idea, within ourselves we indoctrinated to think of how you do things in a better way. So new ideas in my department is more a cultural thing on how we always want to be improving ourselves. In a product innovation I think there is more of a formalised way. But new ideas could be like we spoke about. Anything linked to innovation around product or process, policy or whatever. But it will be anecdotal if I speak about other departments, I would assume, but I can't confirm if this is what they do.

Do you have an understanding of how those ideas get to those forums?

Yes, the ideas come from people, so we have some of these things, in HR perspective we have Themba's corner which is not really for innovation, is more for complaints, but the principle still remains the same. We have these different hubs where people could upload ideas then they have like a group of people that would

go through these ideas and select some of the key ones for people to present. We had something recently, one of the guys in my team, one of the younger guys, now that I think about it, I want to go back to the first question you asked me about diversity. Diversity also span across generations. I also believe it's good to have multiple generations in your team, not just a generation, like generation X or Y who have certain way of thinking as a function of their generation. You need to have a lot of the born free's in your team because they come from a different age, a digital age, where they way they interact with each other is fundamental from the way we interact with each other. To build a successful organisation you need to build for the future which is them. Do build for what you know, because you don't know what they do, you need to speak to them to understand what they do and to have them in your team. For example, one of the guys in my team, is a maters student that came from Wits. He came up with an extremely creative idea on loyalty, which he linked to the construct of how gaming works. His idea was we should incentivise people to play this game, which then is the way of understanding how they get loyalty points, obviously you will do it on an algorithm that makes sure that whatever you pay out in loyalty is not more than what you make from the individual. So that works like a gambling thing and then the beauty is if you look at the current environment that we in, his ideas was we could award people, reward them for transacting on the network at different times in the day based on elasticity when we are underutilised. We could also reward them for just remaining on the network even if they don't make a call, why is that important? Because people have multiple sims these days, so in a polygamist environment, multi sim environment as an operator, I want my sim to be in the guys phone as long as possible. Why, because even if he doesn't make a call, he could receive a call. So we had the idea of rewarding people, giving them points for the duration they have their sim attached to the network. Whether you make a call or not, just by being attached to the network we will reward you. Then we have areas where let's say, by the way this is a network group idea that came from these guys, it's not a marketing idea. We said we could also in areas where our market share is low reward people for using the network. So give them the loyalty points which is like free b's, which we give in any case, but now it's bias to an areas where we have low market share. So you could improve your market share using loyalty as a mechanism to do this, because it's a gaming construct and coming to generations, the younger generations are used to gaming, they will align to it, they will recognize it, they will relate to it, which will make it easier for them to understand and fun for them to use because they are to working like that. And these are the things we need to be thinking about, so building something is about building for the future.

You asked me that question, do we understand what are our people know. So people from different generation will want different things and they know different things and the conduct themselves according to different ways. We have to be able to have those different generations in our environment for us to understand how they think. We not stupid, I am not saying a generation x is a stupid person, I am just saying what they are used to, I am not which doesn't mean I can't understand it. I can understand it and get a sense of how they are, I know what we need to do to appeal to them, but that link is important.

Partnership, do you have partnership for developing new products or services? Local partnership, international or universities?

So yes, well both. So Let discuss something that we pretty proud of and we are actually, let's call it are the leaders in that in this industry. We partnered with QUALCOMM. Qualcomm is a global company that is basically the biggest chip manufacturer, so most devices have Qualcomm chips set to it. We partnered with Qualcomm to develop an MTN phone. I spoke about LCM bands and price points in order to get penetration rates up. As opposed to leaving our fate at the hands of Samsung and Apple who are more incentivise on the upper hand of the market, we thought MTN as a brand is quite powerful, perhaps even more powerful than Samsung and Apple in Africa, which I think it is. So most of our markets reside in Africa, so let's develop an MTN phone, MTN branded phone, what we call a fibulas product, there is no OEM behind it, Qualcomm puts the chipset and we worked with them on defining what features we would like on the chipset, we worked with Qualcomm on the actual form factor of the device itself, which is a chines manufacturer and we branded it MTN. That was our MTN smartphone, the steppa that we launched at a R499 or R500 price point, which was a cheapest smart phone on the market. I think Vodacom also caught on to it via the partnership with vodaphone also done something similar. So that's for me is innovation. We understand the requirements, we know the limitations and we trying to address both. Limitation is price point and requirements is smartphone. This is continues, now we have moved from smartphones to tablets. Now we have a tablet out there which is sub R1000. So we trying to, we working with via some social responsibility initiatives via our foundation to see how we can get tablets into more of the rural areas, obviously areas, schools where I know we have 3G coverage. Obviously putting a tablet in the hands of someone with minimal 2G coverage makes no difference, so that's something else we have been working on. This relationship with Qualcomm is a sustained relationship, in fact they help my team with engineering parameter alignments on a network level. So we have established some real deep roots with these guys and we working with them continuously on how we could even influence the OEM's, the likes of Samsung, Nokia, Sonny, in terms what developments they should be doing on the devices to match better with the network.

Do they have a plant here in SA for skills development?

No, so something else that MTN is embarking on, we are not trying to be everything. It's not our core business to manufacture devices, so we won't manufacture devices. We will influence on what we want, so whether the production plant is here or not, it's a function of let's say scale for the manufacture, if economies of scale help them be more efficient in having a plant here I suppose they would, but whether they have a plant here or there is inconsequential to me. I don't need skills transfer because I don't have any intention of having a manufacturing plant. Skills transfer in terms of engineering understand, yes it happens because we have regular meetings with Qualcomm where they bring industry expects to explain something to us. I would say though and being unbiased as I can, there is not much that is going on around the world that we don't know, maybe one or two things that happens in the most advanced operators, those are Docomowa, Japan and KT in Korea and let's say AT&T in the states. I would put those three as probably the most advanced

operators, with the Docomowa and KT being the most advanced networks in the world. There is no other network that has that level of technology and if I compare our network in terms of technology they have, we probably have about 90% of what they have, the other 10% they have means nothing to us because we don't have a mature market to able to use it and our environment is probably slightly different than theirs, so you don't need every single thing. But the basic principles are aligned without a doubt.

How does your organization keep up with new trends industry? Do you attend conferences, trade shows or further education?

And just on that we attend forums like user groups overseas. So I have attended 3 or 4 forums in my time and I presented in 3 of them. One in Stockholm in Sweden, one in Rome and one in Chinghai and what I found is that a lot of colleagues all the world came to me to ask questions about what we were doing in SA. They were quite intrigued about how advanced we were which gave me some comfort that there is not much happening around the worlds that we don't know about or we have not done, because I have had presentations from Vodaphone Germany to Australia vodaphone to where ever, what people are doing is something we already done or we embarking upon. So whatever one or two thing that are new to us, like security in smartphone, viruses on smartphones getting on to LANS because you use your phone a lot to connect to LAN and the virus from your phone could get on to the LAN, there was a problem with China mobile, but again China mobile have a half billion customers on their network with penetration say up to 50% with 3G devices, it's a completely different size animal compare to our network. So for us to have that magnitude of an issue it's not going to happen in the near future, but it did give me insights to potentially what we should be looking out for. Even if we don't attend these forums, our vendors send us material or presentations done and give us a summary of key points of the forum and they tell us that these things that you may want to test in your network. So we are quite abreast of what is happening around the world.

Do you still encourage people write and present papers?

No as we used to do in the past. The network and the complexity of the network and the combination of that with being under resourced, which I feel network group is and not sure about the other guys, was not conducive to have that happen because you needed all hands on deck. So the papers that I presented would have a topic that somebody would have come up with in forum and ask me if I am able to present something on the topic and then I would say fine I would use MTN as a case study and use what we have done either in a trial or something to quantify or frame the problem. You will have a problem statement of an issue, I would have a case study as to the methodology adopt to solve the problem and recommendations going forward so that anybody else who has a similar problem doesn't need to go through the same steps, just need through recommendations and short circuit the solution. I physically didn't document this and publish it or anything like that, it's to that level. We also did one for SA, I remember going down to Grahamstown to present at a national forum, and it was about broadband penetration in South Africa and what we should be looking at. So I think we have done our fair share of presentations, not as much as I would like and in more

recent, we have been afforded the opportunity to attend some of these forums purely because we can't afford not to be around. I am hoping it gets a bit better.

Does your organization have a way of learning from the past projects and how does it derive these lessons for the future?

Well more recently we have been documenting things, so last year, I spoke about this re-farming, we embarked on big project in the greater Gauteng area where we took away spectrum from GSM on the 900 band and we allocated it to 3G to improve in-building 3G penetration because our biggest issue with 3G coverage is in-building. So you can have street coverage, as soon as you go indoors you may have a couple of bars or nothing at all and will revert to Edge. So what we said is if you getting edge and most people were getting edge a lot and we quantify this by looking at the amount of edge traffic with 3G capable devices. To have a 3G capable device and be doing traffic on edge it means you are in a zero 3G coverage area. We know where these device are, we have geo located them on the map and we want to roll 3G on a 900 because we got edge and you get 3Gbecause it's the same band. The problem was it wasn't done the best possible way. We outsourced the project to Ericson, they didn't do it in the best way which cause a lot of issues, maybe you would have experience some of these issues during the December period, some of it, it was related to load shedding because the site went down and batteries are stolen and can't put generators but a lot of was related to this re-farming project which we subsequently corrected. but going through that pain has taught us valuable lessons and we now going to be doing the same thing across the entire country in a much more aggressive way, but at least we got a lessons learnt document because we know what we should have done to minimize the impact on customers, so it's like a damage control thing. So what we have decided is, we will now adopt a different methodology which we now documented with the objective of only having the customer impacted or be it very minutely, but he will be impacted for not more than 48 hours. An impact in a sense that not that you won't have service, but your service won't be as good as it was and we will only have that for a maximum of 48 hours and be proactive to communicate via text messages and social media to the people that are living in the areas that we are doing this work. So they are aware in advance of what is going to be happening. So we trying to be proactive, we trying to engage with customer, we trying to play open cards with we doing and telling them that they can expect a retardation in service but after the period this is what you can expect, you can expect a better in-building coverage, you can expect to use your smartphone in more places, you can do things faster things like that.

Are they receptive to that?

They are, one thing that I am learning from social media, part of the marketing team that works on social media is that, customers don't mind getting bad news, but they want to get some news. Tell you have problems, tell me you need a week or two weeks to fix it and tell me it going to get better, but tell me something. So this allows people to plan themselves. An information is very important, I mean look at what is happening with Eskom and load shedding, although the schedules has nothing in Gauteng because it's

random load shedding. The schedules are working a lot better in cape town and kzn, so we have a lot better network uptime in those provinces than we do in Gauteng. So I guess using that as a principle and drawing a parallel with that to our environment, we have learnt few things that we need to do, we need to inform our customers, we need to tell them the benefits of it and we just need to be continuously engaging with them via social medial and not just proactively sending a text message.

In closing sir, does your organization do industry foresight and scenario planning? To understand what is coming on the horizon.

Yes we do, the most recent one was done, say beginning to early last year, where we said and what we do is we look at the trend in Europe or at that states because in essence we are not different to them. We are different in the sense of maturity, but maturity is about timing. Very simple, what happens there will happen here just after a period of time. So the biggest trend is broadband take up. We find that we are carrying a lot of traffic on data on our network which I can track, our traffic growth is like over 100% on data and I have noticed that as we rollout coverage more people are incentivise to buy the phone as you make the phones cheaper, more people will buy the phones, so more people will have smartphones in their hands. So what does that mean, it means they going to be transacting a lot on data, they will even be doing their voice calls on data, voice over IP. So it tells us that we need to have a solid data network, we need to have enough capacity because when the masses when we reach a point will have a mass adoption of these devices which I don't think, if I look at the biggest segment if that segment all of sudden start getting smartphones, the amount of traffic that will be carried by this network may even increase by 5 to 10 folds over a period of 12 to 18 months maybe even less. If it doesn't happen in 18 months, it will happen in 24 months, what we doing we preparing it to happen say in 8 months. So the mandate that has gone out is design an architecture for this network that is able to handle a 10 fold increase in traffic, tell me what that looks like, when do I need it the most, who needs it, what does it cost me, over what period of time am I able to execute this, which areas are the most at risk, where is the highest utilization. So let's take this plan and let's chunk it up in priorities and address the burning issues now. Get as much as possible on Capex budget to address as much as possible of this and get ahead of the curve. This is demand on my supply. And I want to have accurate focus mechanisms of tracking this because I want to always move in sync and also have trash holds in place which will activate the next action. I told you about the investments we making, even though revenues are coming down we have to invest, if we don't invest, in 3 years time we will die. This investment is not for 2015, for this organization sustainability for the next 5 years.