Gordon Institute of Business Science
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Digital service innovation in Africa,

The case of mobile network operator, MTN

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Abstract

This report examines the extent and nature of digital service innovation in Africa by analysing the case of the mobile network operator, MTN Group. Specifically, it tests if digital service innovation is required by MNOs in Africa, and if so, what the extent is of the constraints that these MNOs face. In addition, it interrogates the strategies for MNOs to increase service innovation and value co-creation with a deeper look at business model innovation and how it captures value from the trends in the digital ecosystem.

An exploratory thematic analysis was conducted through semi-structured interview for 17 respondents within various departments of MTN Group. Interviews were conducted between September 2015 and October 2015. The results were analysed through an abductive approach similar to that of Dubois and Gadde (2002) in which literature is used to suggest introductory research questions. Thereafter, movement back and forth between the data and theory assisted with the interpretation of the findings and aided with the development and conclusion of the research questions (Freeman, Hutchings, & Chetty, 2012)

The pervasiveness of digital transformation and automation in the global economy is improving customer experiences across sectors which is perpetuating customers to demand digital transformations from laggard firms, like MNO, MTN. The constraint of MTN to execute digital growth strategies in Africa was found to be a lack of SDL amongst MTN managers. From the literature, it was established that the service platform is a key element of the service innovation process, part of the broadened understanding and is a likely constraint to the growth in mobile money services in South Africa.

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Keywords

Service-dominant logic, Digital service innovation, Digital ecosystem, Strategy

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I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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AHMAD MOHAMED **9 November 2015**

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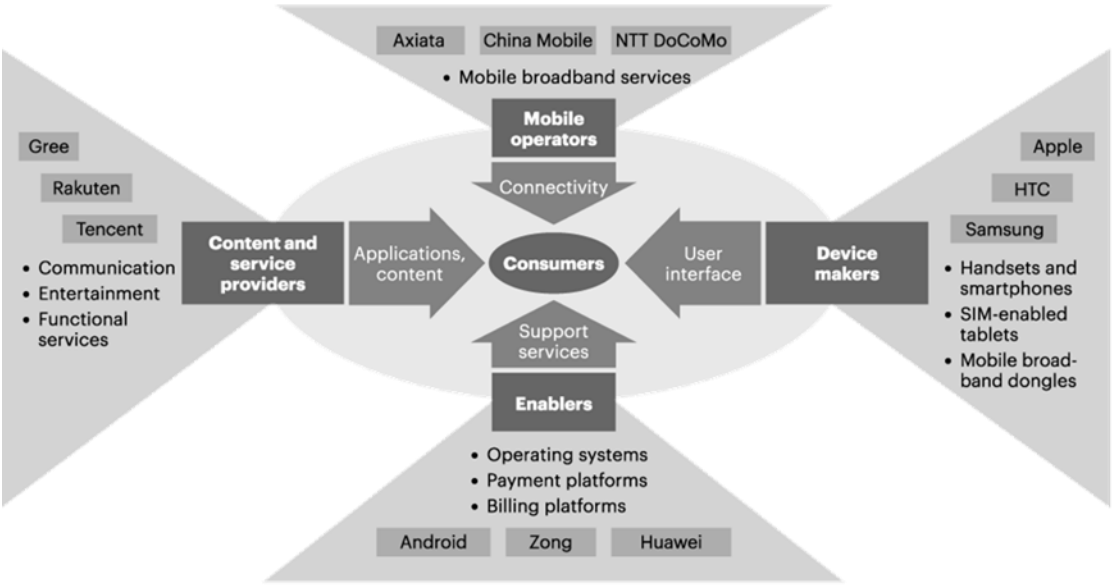
1 Introduction to the Research Problem

1.1 Introduction

Mobile Network Operators have relied on traditional revenue streams to sustain their growth. The growth of mobile communications has been explosive. In 2014, there were 6.9 billion network connections globally, indicating a 12 per cent compounded annual growth rate for the five year period ending 2013 (Piran Partners LLP, 2015). Furthermore, support from the mobile data ecosystem, in particular the availability of cheaper smartphones, has driven up internet access on mobile devices (Piran Partners LLP, 2015). Figure 1 illustrates the various players within a mobile data eco-system, namely content service providers (for the provision of applications and content); enablers (for the provision of support services); and device makers (for the provision of user interfaces).

Figure 1: Mobile data ecosystem (AT Kearney; 2010)



However, this growth is not without challenges. With increased pressure from competitors, the macro-environment and disintermediaries in a global digital eco-

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system (Iacopino, 2013), these mobile network operators must not only find attractive revenue streams in the long-run but do so in markets that holds future potential for growth in mobile usage.

In this chapter, an introduction to the research problem will be outlined with a deeper focus on the key components of the research problem which extend to both the MNO and the target market. Once the problem has been assessed, the research objectives, aim and scope will be relayed within the context of the research problem.

1.2 Research Problem

The research problem will be subdivided to focus on two key aspects of the problem, namely (i) the challenges facing MNOs; and (ii) the challenge of thriving within an African market. Section 1.2.1 to 1.2.5 will address the first challenge; and section 1.2.6 the latter.

1.2.1 The rapid pace of digital transformation in the global economy

Kenney, Rouvinen and Zysman (2015) state that digital transformation can be found in most sectors of the economy, with some occurring at a more rapid and pronounced pace than others. The mobile telecommunications (telecoms) industry is not spared from this transformation. In fact, the telecoms industry can be viewed as undergoing digital transformation on two fronts, with cloud computing within the core of the network and mobile computing at the network edge. Such transformations within computing and communication capability have further given rise to complex global value chains (Kenney, Rouvinen, & Zysman, 2015).

Further compounding the complexity of the digital economy and adding to the extent of digital transformation is the evolving business models of dis-intermediaries and online aggregators. What results is digital disruption and disintermediation of companies by others, for example Uber's disintermediation of the global taxi industry or Alibaba and

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Amazon's disintermediation of local retail stores. These companies are finding digital transformation opportunities within legacy operating and business models. These 'digital innovators' appear as unlikely competitors initially, however re-configure the industry's value proposition to outperform those firms that are not responding to these dynamic digital trends.

Similarly, mobile network operators (MNOs) and their revenues are facing disintermediation of their tradition from SMS and voice services (Kenney, Rouvinen, & Zysman, 2015). Innovative new business models from social platforms like Whatsapp, introduce (cheaper or free) substitutes to consumers for the same services, such as Whatsapp messaging and voice calling or free Wi-Fi internet access in public spaces or retail outlets. In 2014, the then 470 million users on Whatsapp instant messaging service had already disrupted an estimated US$ 33 billion in SMS revenues. With Whatsapp aggressively rolling out their voice calling service in 2015, it is only a matter of time that the extent of the disruption on global MNOs' revenues can be observed.

1.2.2 Commoditisation of core services of MNOs

Commoditization of core telecom services is a problem for MNOs globally (Lescop & Isckia, 2010). The mobile telecommunications industry began with voice calling as the primary service and was the primary driver of growth. Soon after the launch, the SMS messaging service was introduced but has always been a secondary revenue contributor compared to voice calling. In 2001, from further technology innovations, the introduction of mobile broadband internet access as part of 3G, together with the related technology innovations, allowed for data revenue contribution to grow up to approximately 25 per cent of total revenues in 2015 with voice calling still contributing the majority of revenue (GSMA, 2015). The growth in the telecoms industry over the last two decades has primarily been driven by the increase in mobile subscriptions and the subsequent increase in voice calling revenues.

Despite the success of the mobile telecoms industry to date (GSMA, 2015), it is well accepted that past and present business performance is no guarantee for future success (Ozer, 2010). This is especially true when gains are limited due to commoditisation of services and a subsequent lack of differentiation amongst

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competitors follow. MNOs continue to face the dynamics of a mature voice market together with growth in data services but not with the same margins as the voice growth phase (Iacopino, 2013). In addition, the result of increasing and sophisticated needs and wants of the digital service consumer is causing commoditization of basic telecom services (voice, SMS and internet access).

Commoditization can be partly attributed to disruptive innovations in the application economy providing substitutes for these basic core services or merely making these basic services less relevant, capturing customers' preferences and a share of their wallets (Kenney, Rouvinen, & Zysman, 2015). These disruptive innovations are predominately service innovations driven by intangible elements, generally referred to as the customer experience. Even though technology innovation contributes to service innovation, business model and process innovation are increasingly becoming the key drivers of service innovation in the application economy (Pisano, Pironti, & Rieple, 2015). This refers to the innovation of intangible elements that fuel the digital economy.

1.2.3 Poor innovation attempts by MNOs historically

Despite heavy investments to build fast and reliable network infrastructures, the challenge for the mobile network industry today, is to find new sustainable growth options and to stay relevant to consumers (Holzer & Ondrus, 2010). This challenge is exacerbated further due to multiple partially-realised service innovation attempts by MNOs, where limited value creation and customer relevance is uncovered. This suggests the lack of MNOs ability to create value and adapt to an ever-changing digital ecosystem amidst evolving customer needs.

This also points to a constraint by the MNO to innovate more rapidly than the rate of change within the application economy. This comes at a time when there are continuous radical innovations in adjacent industries however form part of the same ecosystem, such as social media in the internet sector but integrated into almost everything online, smartphones and wearables in consumer electronics, creating enormous value by capturing consumers' imagination with delighted experiences, and ultimately their share of wallet (ref to be inserted).

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1.2.4 Convergence within the ICT industry

There has been undisputed convergence within the Information, Communications and Technology (ICT) industry. The ICT convergence is understood as the coming together of the following industries telecommunications, internet, information technology (IT) and high-tech sectors, in such a way that the technologies in equipment, devices and platforms are increasingly more coupled allowing for convergent services to be offered by firms across sectors (Borés, Saurina, & Torres, 2003; Pon, Seppälä, & Kenney, 2015).

1.2.5 Increased competition and macroeconomic challenges

The global revenue growth in the telecoms industry continues to slow with the Global System for Mobile Communications Association forecasting 3.1% p.a compound annual growth rate through to 2020 down from 4% for the period 2008 to 2014 (GSMA, 2015). This is attributed to basic mobile telecom services such as voice, messaging and internet access experiencing downward price pressures. This comes from increased competitor activity, weakened macroeconomic conditions and regulatory pressure (Iacopino, 2013). These are characteristics of a saturating and maturing mobile market. A saturated mature market constrains growth and is typical of a turn in the business cycle. As a result, MNOs are facing declining average revenue per user (ARPU), while there are rising input costs from an increase in connections and data traffic, causing reduced profitability. Despite the slowing subscriber numbers, it is expected that another one billion mobile subscriptions will be reached by 2020 (GSMA Intelligence, 2015).

This decline in average revenue per user (ARPU), and profitably, is a concern for MNOs globally, providing the motivation for these companies to pay attention to the trends in the digital ecosystem (Tusa, Singh, & Chan, 2015). There is some growth remaining from the adoption or diffusion of mobile internet access but in general not sufficient for the capital markets. The *Diffusion of innovations* (Rogers, 2003) has provided a theory that explains why, how and at what pace, new ideas and technology is adopted in new cultures. The different categories of adoption are: innovators, early

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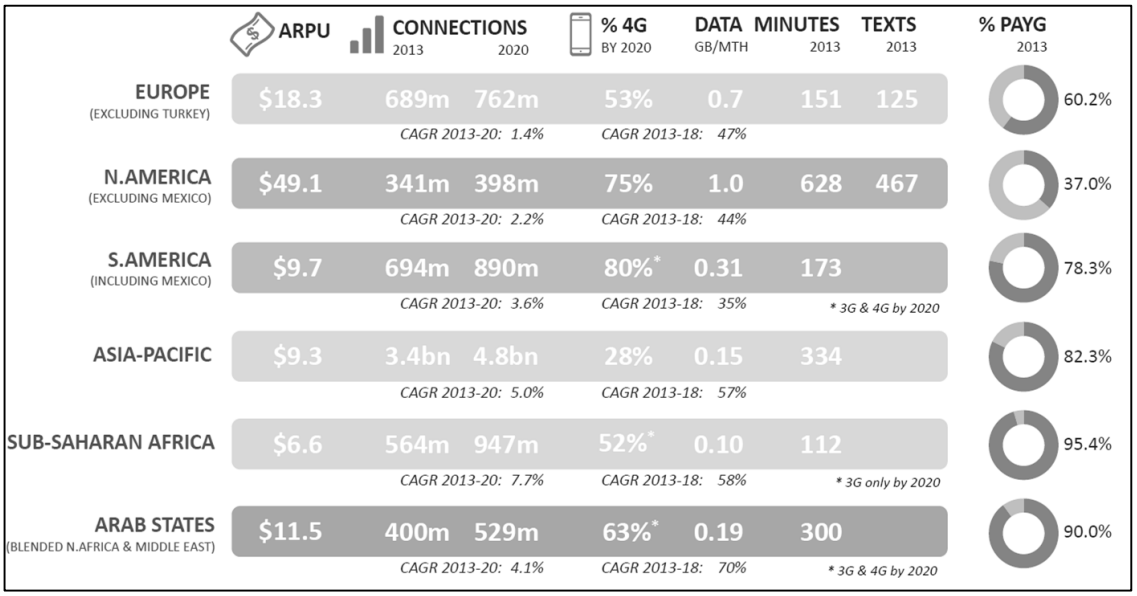
adopters, early majority, late majority and finally laggards. In the developed economies and already in some emerging economies; the mobile industry is reaching the “late majority” or even “laggard” stage of the diffusion of innovations and the product life cycle is reaching the “maturing” or even “decline” stage.

1.2.6 The challenges of attaining success in Africa

Africa has long been seen to be an attractive market based on the demographic dividend it holds, with the IMF projecting that Africa will account for 80 per cent of the projected four billion increase in the global population by 2100 (Drummond, Thakoor, & Yu, 2014). However, the average revenue per user that is generated by MNOs from users within Sub-Saharan Africa is lower than that of any other region (Piran Partners LLP, 2015) indicating challenges of affordability in this demographic. Consequently, this will cause challenges of cost-efficiencies at scale for the MNOs wanting to operate within this region.

Figure 2: Average revenue per user (ARPU) per region (GSMA; 2013)



Given the various challenges facing the future success of MNOs, it becomes critical for MNOs to innovate in order to compete, especially in Africa. The natural questions that arise then becomes, are MNOs innovatively geared to compete and if not, what

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prevents them from doing so? In addition, what strategies can they use to increase their service innovation practices and how do these practices capture value?

1.3 Research Objectives

The objectives of this research are to gather empirical evidence on digital service innovation of an MNO in Africa, using the case of MTN, the largest MNO in Africa. Specifically, the objectives are to use an exploratory research approach to investigate:

- The need of digital service innovation by MNOs in Africa;
- The constraints that are present that prevent the MNO from executing their growth strategy in Africa;
- The strategies that MNOs can adopt in Africa to increase service innovation and create value; and
- How these MNOs' business model innovation captures value from the trends in the digital service ecosystem.

In addition, the objective of this research was to extensively evaluate and critically review the academic theory associated with *service-dominant (S-D) logic* and *service innovation* while making use of the case method to provide an improved understanding of the topic. This case study had allowed for emergent strategic insight relevant to organisations embarking on digital service innovation in Africa. This problem is based on the context and compelling influence of the digital economy on many industries, especially current and relevant is the telecommunications industry.

1.4 Research Aim

By achieving the stated objectives as outlined above, the aim of this research report is to contribute to the body of literature that exists for digital service innovation of MNOs in Africa. The contributions made by this research report can be distinguished from other studies in three ways:

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(i) This research report improves the understanding of how digital service innovation takes place in Africa, using the single case of an MNO, MTN Group Pty Ltd;

(ii) To improve the understanding on this topic, this exploratory study gathered empirical evidence using the lens developed from the literature. The lens emerged from the broadened understanding of service innovation (Lusch & Nambisan, 2015) and service-dominant logic (SDL) (Vargo & Lusch, 2004) which was the specific foundation upon which the theory was reviewed, even though Barrett, Davidson, Prabhu and Vargo (2015) use an additional lens being digital transformation; and

(iii) This research report specifically focuses on digital service innovation strategies to take advantage of the African demographic. Appropriately, MTN Group, the largest MNO in Africa was analysed. This understanding of digital service innovation, and how it takes place in Africa, is especially important in the face of global trends, resulting in commoditization and disruption to the MNO core business model (Tusa, Singh, & Chan, 2015; Karpinski, 2008).

1.5 Research Scope

To limit the research scope of this report, key themes were identified as parameters for the scope of this study. These themes are service-dominant logic, service innovation, service platforms and value co-creation.

Service-Dominant Logic and Service Innovation

The focus on innovation capability as a distinctive competence or competitive advantage has been extensively covered in academic business literature, with the conceptual focus being on technology innovation (Lengnick-Hall, 1992; Ibrahim & Fallah, 2005) as opposed to service innovation. While the insights on technology innovation were useful for developing the motivation of the research scope, it was not

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sufficient to understand how digital service innovation is occurring in Africa and how MNOs should innovate to thrive using digital transformation.

The widespread adoption of digital services based on web technologies has changed the dynamics of socioeconomic factors globally. The pervasiveness of trends in mobile, cloud, social networking and media can be found in most socioeconmic settings. Given this context and the literature review in Chapter 2, the research required was found to be an emperical study on digital service innovation in Africa. The conceptual underpinning of this exploratry case study was based on service innovation (Lusch & Nambisan, 2015) and Service-Dominant (S-D) logic (Vargo & Lusch, 2008).

Technology versus Service Innovation

Evidence of technology innovation show that it has enabled many organizations and nations to develop a distinctive competence and advantage over competitors by creating and capturing business value (surplus) from exchanges with customers (Zamora-Torres & Archundia, 2014). Technology innovation refers to the new, novel and improved physical or tangible elements of the value exchange. The predominant outlook or understanding of innovation has been synonymous with technology innovation and has been a complex relationship with business value or competitive advance (Lengnick-Hall, 1992).

At this introductory stage, it would be of interest to provide some historic anecdotal evidence on how the goods-dominant logic was further entrenched in business theory and practice with the emergence of computing and ICT technologies. The emergence and innovations with communications, computing and IT technologies had promoted the importance of understanding technology and innovation to understand business in the modern age. The importance of technology and innovation as key elements, part of the strategic debate, for business and nations has been established and entrenched over the past four decades. This was part of the advancements and spill over effects of the Cold War, and what could be described as the ICT race between two opposing superpowers (Gannon, 2012).

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The increasing rate of change of technology or argued even as the perceived rate of change, has further entrenched technology and innovation as part of global strategic business understanding (Glick, 2013). The link between technology or technology innovation and strategy has been explicitly part of business literature from the 70s and 80s (Kantrow, 1980; Sayles, 1973). The importance of technology innovation in modern business knowledge was emphasised by the apparent success and failures of companies throughout the industrial age of the developed world and much of these success or failures were attributed to adoption of technology innovation or lack thereof, example the Kodak company (Lucas Jr. & Goh, 2009).

Technology innovation today, continues to be an important factor to enable this advantage. This, in some consumer electronics means: faster processing or connection speed; larger memory; or smaller or thinner form factor. However empirical evidence suggested for a long time now that technology innovation is increasingly becoming insufficient to sustain a competitive advantage as features and functionality can be rapidly replicated by competitors (Lengnick-Hall, 1992). As such, this research will *not* focus on technology innovation as it can be seen as necessary but insufficient to sustain a competitive advantage due to its replicability amongst competitors.

Technology innovation, however does enable service innovation and there is increased business value in thinking about innovation holistically, i.e. the technology that enables the service together with the business model that captures the value. (Lescop & Isckia, 2010). The service sectors contribution to Global GDP is increasing and is expected to accelerate as more services become information centric, digital and connected. There is an awareness more recently and trend today for organizations to focus beyond technology innovation, i.e. place an emphasis on service innovation to create enormous business value (Lescop & Isckia, 2010). This trend is accelerating and further emphasised by the increased digitization of information and services coupled with the ubiquitous access to the internet via mobile devices (Barrett, Davidson, Prabhu, & Vargo, 2015).

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ICT Sector

The scope of the research will be limited to the ICT sector with a focus on mobile telecoms, IT and the internet sectors. The focus will be created by examining the trends in service platforms enabled by technology but limiting this to the digital ecosystem, i.e. internet connected services. Included within this digital ecosystem is a review of the commercial partnerships between firms that reconfigure their resources and capabilities to offer value propositions to customers.

Value co-creation

The final element still within scope of this research is the co-creation aspects of value with the consumer, i.e. value can only be offered by the firm for a consumer to accept and realise. The literature review will guide the approach to which the data will be collected, such that not all the available data available on the case subject, MTN will be used as part of the analysis.

1.6 Conclusion

This chapter provided an overview of the research problem in so far as it extended to digital service innovation in MNOs. The objective of this study was highlighted within the context of addressing the research problem, taking care to outline the scope and aim of the research report in the pursuit of meeting the stated research objectives.

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2 Literature Review

2.1 Introduction

Digital service innovation is increasingly more topical today. While there have been few academic journals covering this using a business, management or economic view, it has not been nearly as sufficient to understand a problem or opportunity of this size. This chapter covers the academic literature review of the existing body of knowledge for this topic. Due to the limited coverage of this topic in business, management or economic academic literature, the evaluation included an extended analysis of related ICT topics (cloud, big data, and internet of things) found in academic literature, demonstrating relevance but also trending in practitioner publications.

The relevance was established towards the central theme of digital service innovation and to the ICT industry. These related themes were found both as industry-agnostic and from within the context of ICT (Barrett, Davidson, Prabhu, & Vargo, 2015). Towards the end of this research period, it was observed that the publications related to digital service innovation, began appearing increasingly in the most recent months.

This review starts with the definition of services using Service-Dominant (S-D) logic. The review then proceeds with the broadened view of service innovation but the literature context was explored within the paradigm of the digital service revolution. This understanding allows business models and business operations to explore new configurations and re-combinations to transcend from a product-centric focus to a service-centric focus (Lusch & Nambisan, 2015). The Service-Dominant (S-D) logic provides a lens to see value shift from the tangible to the intangible, because of application of knowledge and skills, with the customer always part of value co-creation.

While this review covers predominately conceptual literature, sufficient empirical evidence suggest service-dominant (S-D) is becoming increasingly apparent and it was found that with pervasive digitisation, services across the global economy are more information centric, depending immensely on ICT enablement, presenting increasingly as cloud computing (Markovic, Branovic, & Popovic, 2014). While these evaluations

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were intriguing, much of the literature on the topic were found to be related to the service innovation aspect and were far too generic, with insufficient insight on how digital service innovation occurs in Africa and what these digital services might mean for the general society (Kenney, Rouvinen, & Zysman, 2015).

These generic constructs offered the promise to provide new insights and meanings on digital service innovation, if it could be focused, tweaked and tested against obvious questions that emerge from this literature for the ICT space, covering mobile telecommunication, internet and high-tech sectors (Barrett, Davidson, Prabhu, & Vargo, 2015). It is primarily from this finding, i.e. the generativity of the literature on service innovation, as will be discussed in Chapter 4 that motivated for a case-study method. This allowed empirical evidence to be gathered in an exploratory approach to contribute by guiding further research that would focus on defining appropriate models for digital service innovation.

The latter part of this literature review has evaluated the ecosystem of the telecoms industry in particular, and what service innovations have occurred in the mobile telecoms industry in Africa but also extended it to encompass the digital or ICT ecosystem in Africa. The broader digital ecosystem is acknowledged and argued to be the strategic unit of analysis (as to be discussed in Chapter 5) for the future of this industry, and will assist with understanding how digital service innovation occurs in Africa. The motivation for this broader digital ecosystem analysis stems from the convergence of the ICT industries, its pervasiveness in all sectors in the global economy allowing for service innovation across business and society (Kenney, Rouvinen, & Zysman, 2015).

To set the foundation for the findings (in Chapter 5) of this exploratory case study, incorporated into a portion of the literature review in this chapter, is a review of the industry commentary within academic literature. This review looks at how the mobile network platform evolved while examining the driving factors that lead to technology convergence. What also forms part of the review in this chapter is pioneering research on new business model theory, ICT and mobile telecom service offerings, from the Internet of Things (IoT), cloud computing and even big data analytics and how this

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assists with the understanding of digital service innovation in Africa (Andersson & Mattsson, 2015).

The final part of this chapter defines the framework to set the foundation upon which the core of this exploratory research will be based upon. This framework is defined around digital service innovation and suggests the liberalisation of the mobile telecom network as a platform. A digital platform that network operators can leverage to create value and is argued that MNOs should loosen control without destroying value in order to open it up to other firms (or subsidiaries) to develop complementary products, similar to platforms in the internet or web based domain and even move towards value co-creation with a network of partners and service users based on the broadened view of service innovation (Lusch & Nambisan, 2015).

2.2 A distinction between Goods vs services

The debate about the difference between goods and services and the relevance of these differences to economics has been ongoing for a few decades post the first industrial age. The growth of services as part of the global economy and the importance of understanding and managing a service-orientated business compared to the traditional industrial-age goods type business, has largely been accepted in academia, especially more recently (Smith & Maull, 2014). Despite this awareness in academic literature, in business practice, the goods-centric mind-set still dominates, but it is turning.

The original earlier assertions from the industrial age (still found in the work place) include propositions that the distinction between goods and services are less important and that services are merely “immaterial goods” (Hill, 1977). Hill (1977) has stated that Adam Smith emphasized the differences between goods and services and was regarded of great importance by classical economists. In this section, the most recent literature on the conceptual understanding of services was reviewed. An elementary understanding of services will make this research on digital service innovation more accessible.

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The definition of services could be captured as the change in state of an economic unit that is caused by the activity of another economic unit. Due to this change in state over time, the dimensions are different from goods, as goods are defined as a material object and hence services are in a different logical category from goods. While a service is produced by one economic unit for another, nothing tangible is exchanged as with goods and where ownership is transferred (Hill, 1977).

A modern understanding of services is best derived from Service-Dominant (S-D) logic. An evolving theoretical framework, from when first named and defined by Vargo and Lusch (2004). This framework is a mind-set and lens that offered a profound and comprehensive picture of economic exchange. It is based on the fundamental idea captured in this great economic law from Bastiat (1848) via (Lusch & Nambisan, 2015):

"Services are exchanged for services…It is trivial, very common-place; it is, nonetheless, the beginning, the middle, and the end of economic science."

Service-Dominant (S-D) logic, an award-winning concept, is argued to be valuable across business functions with the academic community offering favourable comments and enabling a number of academic debates around this framework (Bolton, et al., 2004). Table 2.1 below describes the foundational premises that are at the heart of the Service-Dominant (S-D) logic thinking (Vargo & Lusch, 2008).

Table 1: Description of the S-D logic thinking (Vargo & Lusch, 2008)

Foundational Premise	Explanation
Service is the fundamental basis of exchange	As defined in S-D logic, "Service" is the application of knowledge and skills, and is the basis for all exchange. Service is exchanged for service.
Indirect exchange masks the fundamental basis of exchange	Because service is provided through complex combinations of goods, money, and institutions, the service basis of exchange is not always apparent
Goods are a distribution mechanism for service provision	Goods (both durable and non-durable) derive their value through use – the service they provide
Knowledge and skills are the fundamental source of competitive advantage	The comparative ability to cause desired change drives competition
All economies are service	Service (singular) is only now becoming more

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economies	apparent with increased specialization and outsourcing
The customer is always a co-creator of value	Implies value creation is interactional
The enterprise cannot deliver value, but only offer value propositions	Enterprises can offer their applied resources for value creation and collaboratively (interactively) create value following acceptance of value propositions, but cannot create and/or deliver value independently
A service-centred view is inherently customer oriented and relational	Because service is defined in terms of customer-determined benefit and co-created it is inherently customer oriented and relational
All social and economic actors are resource integrators	Implies the context of value creation is networks of networks (resource integrators)
Value is always uniquely and phenomenologically determined by the beneficiary	Value is idiosyncratic, experiential, contextual, and meaning laden

Service-Dominant (S-D) logic is the shift in mental model from product features to customer experience. A strategic shift, for firms and managers to transcend the good service, tangible-intangible divide, with the value becoming intangible and information centric (Lusch & Nambisan, 2015). The literature suggests that there is value for organisations to shift from the goods-dominant (G-D) logic towards a service-dominant (S-D) logic, as the G-D logic is found entrenched in firms and managers' knowledge from the industrial age, despite the increased literature on services and increasingly more firms requiring to understand services due to pervasive digitization and increasing servitization.

Digitization refers to use of ICT in business operations, while servitization refers to service-orientation of an organisation, often manufacturing firms. Product features are more tangible product outputs and can be easily copied, but services or customer experience is intangible. The key insights come from the process of innovation and the outputs for the different conceptual models, i.e. goods-dominant (G-D) logic, resource-based and service-dominant (S-D) logic.

The debate regarding the need for marketing theory to be updated to replace manufacturing logic with Service-dominant logic is ongoing because of the split between the resource-based view and knowledge management, but Mele et. al (2014)

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argues that service-dominant logic extends conceptually much further than this debate. Despite this point, Mele et. al (2014) argue that the lines are blurring between manufacturing and service industries and Lusch & Nambisan (2015) provide the following re-definitions, which will be carried forward in this research:

a) **Re-conceptualizing service:**
   Service involves applying resources for the benefit of others or oneself
b) **Re-conceptualizing resources:**
   Resources can be tangible or intangible, under control and internal or external but usable.
c) **Re-conceptualizing exchange:**
   The view of what is exchanged changes drastically from a goods-focused view to a service-focused view, with the exchange from the goods-view being the more physical output and for the service-focused view, it is more the performance of the specialised skill.
d) **Re-conceptualizing value:**
   A shift to value-in-use rather than value-added, as value is perceived in context.

2.3 A definition of service innovation

To contribute to the understanding of service innovation in digital ecosystems, the service-dominant logic comparison provides some key insights. With goods-dominant logic providing a new good or service as the output of the innovation process and the firm as an actor, while for the resource-based view, innovation is established as driven by knowledge, capabilities and relationship but ultimately the primary innovator is still the company (Mele, Colurcio, & Russo-Spena, 2014). Mele et. al (2014) discussed the service-dominant logic concept as providing the definition of an open innovation process as discussed by Lusch & Nambisan (2015), with all actors in a network that can mobilize and integrate their resources to become value co-creators.

Lusch and Nambisan (2015) provided a broadened view of service innovation that is grounded in service-dominant logic to provide a three-element framework:

(1) Service ecosystems

(2) Service platforms, and

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(3) Value co-creation.

This three element framework is aligned to (Barrett, Davidson, Prabhu, & Vargo, 2015) which has also supported the value of service-dominant logic to understand service innovation. Common examples to understand service ecosystems, service platforms, and co-innovation is the Android platform in the Google ecosystem or iOS platform in the Apple ecosystem (Kankanhalli, Ye, & Hock, 2015). This conceptual development of service innovation had also included theory-based developments on services, the role of digital artefacts and innovation, with the exploration of service innovations from emerging economies. This provided a strong motivation for using MTN or mobile telecoms in Africa as a case study, this to gather empirical evidence in helping to understand how digital service innovation takes place in Africa.

In this review, the use of SDL to differentiate between knowledge ("knowing-what") and skills ("knowing-how") (Purvis & Purvis, 2012) in the context of the MNO industry was not achieved. This is due to the fact that in the MNO or digital sectors, skill is highly knowledge-based but it likely that the article by Purvis & Purvis (2012) could be used to argue that skill is how successful the knowledge can be applied.

The three elements from Lusch and Nambisan (2015) broadened view on service innovation was built from the conceptual development of the following four themes:

(i) Collaborative process amongst actors in a network for innovation;
(ii) Service as the application of specialized competences for the benefit of another actor or the self and is the basis of all exchanges;
(iii) The generativity unleashed by increasing resource density and liquefaction; and
(iv) Resource integration as the fundamental way to innovate.

Each of these four themes was de-constructed conceptually to recombine an understanding that enabled this research to collect empirical evidence to confirm, modify and improve the understanding of digital service innovation. Breaking down the themes:

1. Collaborative process amongst actors in a network for innovation
This means that the process of service innovation is a collaboration between

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different actors or teams that connected in some way. This construct is the central to the understanding of value co-creation or co-innovation.
2. Service as the application of specialized competences for the benefit of another actor or the self and is the basis of all exchanges
Actors, firms, people or groups of people have a particular skill or capability that is limited and in demand but offers this skill to other actors, firms, people or the self to get some gain or value. This skill is used and offered as a service.
3. The generativity unleashed by increasing resource density and liquefaction
In SDL, resources are understood to be increasingly intangible, decoupled from physical devices and objects, suggesting characteristics of liquefaction. As an example, information is increasingly a key resource in service innovation, only valuable if shared, further understood by the liquid characteristics of digital information. The application of these resources for the application of others or oneself enables these resources to be reconfigured or mobilised for a time, space or actor such that the best configuration is achieved resulting in maximum resource density. With high resource density and liquefaction, it is argued that unbound potential is achieved.
4. Resource integration as the fundamental way to innovate
SDL defines all social and economic actors as resource integrators with integration meaning the recombination of different resources for service innovation.

The abstraction of service-dominant logic from Lusch & Nambisan (2015) provides for service innovation to be understood theoretically, but the above theoretical foundations (four themes) of service-dominant logic were found to be theoretically dense, yet foundational to explore service innovation in digital service ecosystems (Barrett, Davidson, Prabhu, & Vargo, 2015).

2.4 Service innovation in Africa by MNOs

This section looks at how the mobile network platform evolved through the different network standards and includes a review of the driving factors that led to technology innovation and subsequently convergence. The narrative begins with a review of the industry history before taking a look at two popular service innovations within the mobile telecoms industry, i.e. mobile money and mobile content services.

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To understand the background to these original service innovations in the mobile industry, a short history lesson would be useful, especially considering that this research employs a single case study of a mobile network operator, MTN. This historical account on the developments in the mobile industry provides the context to understand service innovation in this industry. The elements of service innovation has evolved over time, driven by the customer. The customers' perceived value of these service innovations have to some extent been diluted as a result of 'newer' service innovations.

Traditional mobile network services are even argued to be undergoing commoditization. This is in line with service-dominant logic and the broadened understanding of service innovation, in that value is created as a network of networks (Lusch & Nambisan, 2015) and that value is idiosyncratic (Vargo & Lusch, 2008) explaining the consumer shift to perceive the source of telecommunication value beyond just the MNO but from a plethora of apps and digital services. These themes, as argued across the literature, concurs with the motion that, service innovation and propositions should be built based on the perspectives of the customers' value creation, translating to the service that the customer experiences (Skålén, Gummerus, Koskull, & Magnusson, 2015).

The foundation of the goods-dominant logic (GDL) in the telecommunications industry dates back to the invention of the telephone due to significant contributions in the form of incremental tangible technology innovations in the mechanical, electromechanical, and electrical form (Shulman, 2008). The core benefit of voice calling over a telephone is intangible, suggesting that it is a service, which requires a shift towards SDL to further innovate, especially considering the digital trends. It is also crucial to note that this service began and evolved by physical technology innovations (mechanical, electromechanical, electrical, and later even digital electronics enabled by the transistor and silicon) supported by a GDL. These technology innovations enabled sound or human voice to travel over long distances to a receiver at the other end (Shulman, 2008).

The telephone and subsequent related technology innovations drove the global adoption of voice calling services and the growth of the fixed line telecoms industry.

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Radio and wireless related technology innovations were major developments that enabled access to voice calling services while users moved around. This mobility of the voice service and the flexibility of a wireless “last mile” infrastructure provided for growth that outpaced and outperformed the fixed line sector. Due to these electronic and communication technology innovations, the first handheld mobile telephone was introduced in 1973, based on an analogue electronics network, giving birth to the mobile industry. Subsequently, in 1991, after further technology innovations in digital electronics, the first network based on the “second generation” (2G) digital communications standard was deployed, with comparatively higher quality.

The adoption of the 2G standard and the global rise of many Mobile Network Operators (MNOs) to setup networks based on this 2G GSM (Global System for Mobile Communications) standard resulted in a rapid adoption of mobile phones and the increase in the usage of voice calling services. Similar trends followed in South Africa with two MNOs starting up around 1995. MNOs in the rest of Africa, especially those in countries with poor infrastructure development, had started-up at a later stage but many today have high technology adoption rates and have even leapfrogged more developed countries on particular technologies. These countries also have non-traditional technology adoption paths, example with high adoption of mobile telephone technologies with very little to no fixed line telephone technologies. This is attributed due to the lack of infrastructure and this means that many countries even have more than 75% of the population with mobile phone connections while fixed line telephones are almost zero.

The relevance of this to the research is that with technology and even service innovation in Africa, the mobile industry was able to leapfrog to best in class fit for purpose solutions in Africa unlike in the rest of the world. This attracted further incremental innovations of the original mobile telephone that further allowed for wide spread adoption of the mobile phone, and resulted in phenomenal growth and success of this industry.

The success of the mobile industry it likely to be concluded by the 7.4 billion mobile subscriptions globally by the end of 2014 (including M2M) or 3.7 billion unique mobile subscriptions. All doubt is removed with the full year 2013 reported revenues at $1.13

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trillion up 3.75% year-on-year, however average revenue per user (ARPU) was $12.15, down 3.97% year-on-year (GSMA, 2015).

The mobile ecosystem is a key driver of welfare and economic progress globally and according to the Global System for Mobile Communications Association (GSMA, 2015), in 2014 the mobile or telecoms industry accounted for 3.8% of the global gross domestic product, this is over three trillion US dollars in contribution to economic value in 236 countries. The Global System for Mobile Communications Association indicates that this figure only captures the direct, indirect and productivity impacts of the mobile ecosystem but does not include broader socio-economic effects.

With the innovation and increased proliferation of mobile smart devices, high-speed internet access, and cloud computing, the new reality of mobile applications has emerged. This reality impacts business in almost every industry in the form of the application or digital economy and defines much of the customer experience and fortunes of the business. This application economy also referred to as the digital economy, while having an impact on every industry is transforming or requires the transformation of the telecommunications industry and represents new threats or opportunities (GSMA, 2015).

The continued dramatic fall of prices for the same computing capability and memory from 18 to 24 months ago, leads to a worldwide proliferation of digital infrastructure made up of computer server systems, mobile devices, broadband network connections, and advanced applications that are now cheaper for the same capacity or computing power and even easier to setup and use.

The growth of telecommunication in Africa has been huge over the last decade with large investments in the required technologies across the continent and is expected to increase going forward (Jackson, 2014). Sub-Saharan Africa has witnessed the largest growth in undersea capacity in the world, compounded average growth over the last five years has been 71%. Falling prices of handsets and voice communications will allow a much larger of percentage of people if Africa to get access to mobile telecom services. In addition, the cost of accessing the internet on a mobile device is falling

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continuously in Africa, aiding in digital service penetration, further motivating mobile network operators to invest in enhanced data capabilities of their networks (Ford & Noury, 2010).

A primary example of a successful service innovation in Africa is mobile money services. M-Pesa was introduced by mobile network operator (MNO) Safaricom in Kenya, and was an early revolutionary mobile money transfer service, a perfect storm with the correct factor conditions, a market need, regulatory window, and organisational will. This mobile money service introduced a service innovation to the world, and has since become increasingly popular across the African continent, with 70% of all mobile money transfers in the world, taking place on the African continent (Jacobs & Walker, 2014).

Many MNOs across Africa have since proceeded to launch their own versions of mobile money services with varying degrees of success. According to MasterCard, there are 218 mobile money service providers in the world and 58% of these are on the African continent. Mobile money users in Africa make up 77% of the world's transactions at a volume of US$5.7bn. As a result, rivalry between banks and mobile operators have ensued, with banks in some markets eager to lead this service innovation to ensure mobile network operators do not block them out.

In Ghana, the central bank has opened up the market for mobile operators allowing for increased competition between banks and mobile operators, effectively dropping the cost of money transfer for consumers. As mobile money continues to roll out and mature across Africa, mobile operators and banks try to find the next big service innovation. Merchant payments have been identified as a possible opportunity with the use of near field communication (NFC) and Kenyan banks have been trying to tap into this mobile money honey pot by launching mobile POS devices for merchants to process payments.

Another example of a successful service innovation in Africa is mobile content services which began when mobile operators setup the wireless application service provider (WASP) business model. This model together with the comparative pervasiveness of

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mobile phones in Africa (i.e. more people have mobile phones than television) which allowed the content category or mobile entertainment services to take off in the form of ringtones, graphics and text message with joke of the day, love quotes, etc. (Kelly, 2006). This was based on a revenue share model between the WASPs and the MNO, but the WASPs operated their content development autonomously from the MNOs with merely standard agreements and APIs in place for billing and messaging. Due to the success of early content sales via the WASP model, MNOs together with technology providers have also directly introduced content services.

MNOs also launched more network centric services such as ring-back-tones. With the success of ring-back-tones, MNOs ventured to partner directly with African music artists to sell more ring-back-tones and eventually full tracks over mobile phone apps or web, however this over the top type music offering is competitive with non-mobile operator companies specialising in such services (Robehmed, 2013).

2.5 An analysis of the service ecosystem construct

The ecosystem construct, borrowed from ecology, represents a community of interacting entities such as individuals and organisations, including customers, in such a way that their capabilities and roles, change and depend on each other to ensure their effectiveness and survival (Lansiti and Levien 2004; Moore 1993 via Lusch & Nambisan 2015). The service ecoystem could be defined as made up of the following constructs:

- Structural flexibility and integrity of the interactions in the ecosystem
- Cognitive distance and shared worldview between actors in the ecosystem
- Value creation will be co-created amongst actors in the ecosystem
- A network of actors in the ecosystem
- Service platforms

The mobile telecoms industry is found in an ecosystem that is expanding as new trends and services are influencing customers and hence the decisions of MNOs. Some of these trends are listed below to provide an understanding of the context for this industry. The mobile telecoms industry has evolved over the past two decades with a

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cyclical influence on the evolution of the digital service ecosystem. The development and advancement of consumer electronics or mobile computing devices, mobile communication technology standards and digital platforms have brought the internet to mobile phones with ever-increasing access speeds and a richer experience of apps, sensors and wearables. The industry communication standards continues to evolve these digital standards on a very stable trajectory but is increasingly going through rapid change, driven by technology and service innovations within and external to the industry.

This evolution is assisted by radical and incremental innovations in other industries that are increasingly becoming part of the same ecosystem, also known as the digital ecosystem. These innovations manifested as new capabilities and service models, including miniaturisation of electronics, improvements and falling costs in computer processors, memory, consumer electronics, battery technology, mobile operating system development, web application development, mobile computing, internet search, cloud computing, the internet of things, social media, big data analytics and machine learning.

Figure 2.1 below, produced using public data available from the International Telecommunications Union (International Telecommunications Union, 2015) and Global System for Mobile Communications Association (GSMA Intelligence, 2015). Figure 2.1 indicates that mobile connections began to take off in 1994 and in 2015 has global growth to 219 countries, covering 90% of the world population. Over this time, the industry evolved from the 2G standards to subsequent mobile network deployments based on 3G and 4G standards, including extensive research and development on 5G. This data illustrated in Figure 2.1 confirms that the adoption of the mobile phone innovation and success of the mobile telecoms industry to date.

The mobile telecoms space is showing increasing complexity. Devices are getting smarter with more capability and mobile connectivity is increasing in throughput with 3G and LTE deployments together with a number of network features. Understanding services and service innovation are critical for mobile telecoms' transformation to align to these trends for their success. Innovation in the mobile telecoms industry is taking place but empirical evidence suggests that many parts of the business are still lagging

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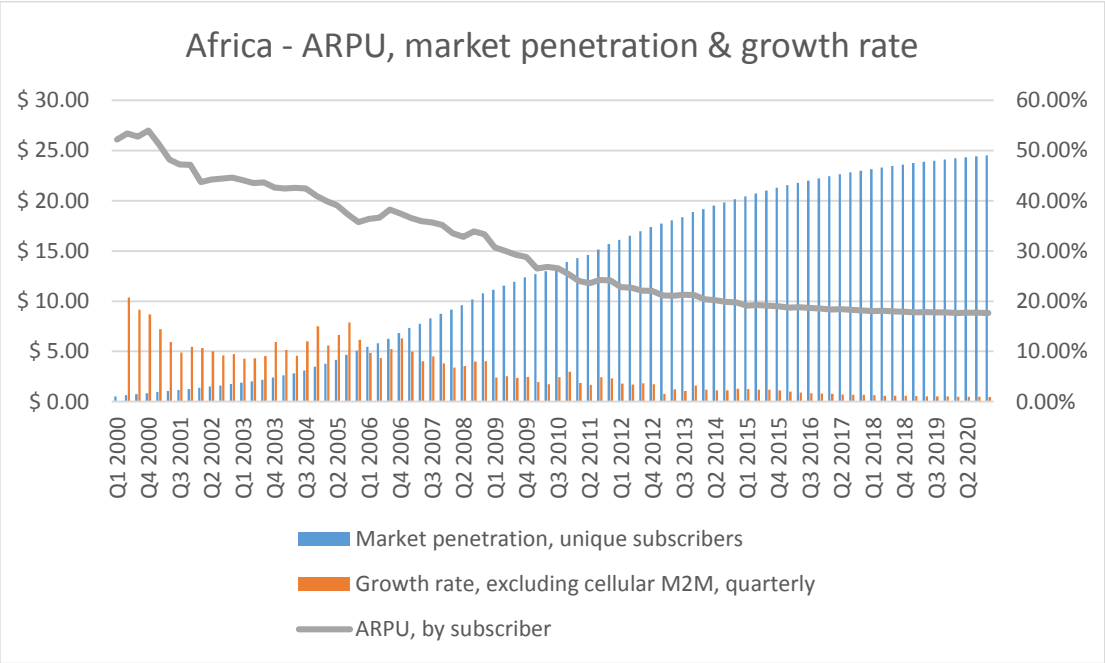
due to holding on to firm-centric and product-centric logic. A need for the conceptual development of service-dominant (S-D) logic within MNOs is apparent, and especially evident in Africa.

Figure 3: ARPU, Market Penetration and Growth Rates in Africa



The motivation for this broader digital ecosystem analysis stems from the convergence of the Information, Communications and Technology industries, driven by the wide spread adoption of the Internet Protocol (IP), especially in telecommunications, across transmission and even last mile technologies. The motivation for a broader digital ecosystem review therefore is needed because of the pervasiveness of IP and ICT convergence, including the adoption in all sectors of the global economy and now increasingly due to digital service innovation (Kenney, Rouvinen, & Zysman, 2015).

Evaluating these themes related to service innovation against the work on digital business strategy and value creation, the constructs are found to be valid but (Pagani, 2013) describes the ecosystem conceptually as a value network with different coupling structures. When looking critically at the meaning of these constructs, by using the application of these, in literature covering the current service business context for internet of things (IoT) (Andersson & Mattsson, 2015), the usefulness of these conceptual developments become evident.

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Some of the new stakeholders to mobile network operators in this ecosystem are other regulators or standards bodies not part of government. The landscape is changing, with consumers changing, demanding more services of higher quality. In some markets, the government is found trying to re-enter the mobile telecoms industry. The ecosystem is expanding due to convergence and cross-bundling. In order to provide some context on some of the actors that might be part of the next service innovation in the telecoms space, this is a list of solution providers and potential service partners, network equipment manufacturers and service designers, OEM or device suppliers, Content providers or OTT providers, Cloud Service platform designers and ICT services providers.

Some of the characteristics of some of these partners are that they are, listed and competitive, multi nationals, or non-traditional operators. In addition, governments want more involvement in these services. Mobile networks can be viewed as digital platforms which offer a foundation upon which other firms can develop complementary products, technologies, and services (Cusumano & Gawer, 2002; Grisot, Hanseth, & Thorseng, 2014) The literature suggests that there is a tension between generative potential and control in digital infrastructures (Ghazawneh & Henfridsson, 2013). Mobile telecoms are faced with the challenge of loosening control in order to capture the generative potential of their network.

2.6 Next service innovations in Africa by MNOs

2.6.1 Service platforms and XaaS (anything-as-a-Service)

In this section, a review of the literature was done in a way as to explore from which area, topic or construct, will the next service innovation in the telecoms space come from. It was evident from the literature review that the opportunities will not come from a single dimension but will be made up using a combination of resources. To understand this best, a few conceptual constructs are covered in this section, all related to computing, connectivity, and digitization as it is the expected sources for the next service innovation in the telecoms space. It is for this reason that this section

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explored cloud computing or XaaS (anything as a service) as it represents, the Internet of Things (IoT) and the big data it generates, together with the analytics and business model frameworks to help capture the value of service innovations enabled using these constructs.

Service innovations providing business value in the mobile telecoms industry has seemed to have stalled in recent years and there is evidence that MNOs are under immense pressure to redefine their business to diversify away from providing only traditional telecoms services. A clear trend, with ICT convergence is the emergence of service-orientated architecture, providing new IT service opportunities and newer telecom service offerings and business models.

Mobile network operators (MNOs) have shifted focus over the recent few years from focusing only on consumer services to include enterprise services. This presents new stakeholders and partnerships, with a new set of challenges and opportunities. The convergence of the telecommunication and IT industries (Borés, Saurina, & Torres, 2003) have presented the opportunity for MNOs to use the skill they have acquired in IT together with the access to capital to ramp-up their IT service offerings.

A key focus area of MNOs for the next digital service innovation is cloud, with the trends in increased cloud consumption. Cloud computing maybe described in ICT as XaaS, i.e. anything as a service, covering Platform as a Service or Infrastructure as a Service, Software as a Service, etc. The major drive for this is derived from the value proposition of anything as a service (XaaS), which includes the following extracted list (Gerhard, Cordero, Reberger, & Dolan, 2013):

- Speed of deployment
- Fewer skill requirements
- Business agility
- Ability to support mobile and remote workers
- On-demand capacity and scalability
- Improved IT infrastructure manageability and flexibility
- Better disaster recovery

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- More flexibility for testing and special projects

Many of the current emergent platform and service innovations in mobile telecoms are based on this concept of cloud services, and from the common use in everyday language, it is now argued to be just a marketing name for XaaS (anything as a service). While cloud services has received increased attention as a trend for businesses to align to, it is not a new concept in computing as it can be traced back to computer time-sharing from the 1970s. Cloud computing does provide a more developed service orientated approach to computing related services, not present in the traditional computer time-sharing (Nemani, 2011). Cloud is not the core theme of this research and while it could be argued to have only tangential linkages to digital service innovation, it is argued that cloud increasingly presents many types of service innovations for MNOs today and going forward, especially for enterprises.

The dominant reason for MNOs understanding cloud is to also understand how it enables and fuels digital service innovation for start-ups or small to medium enterprises, especially as a key trend along with mobile. The understanding of these trends forms the basis for understanding digital service innovation and the critical ability for digital service start-ups to rapidly scale and dominate the market.

Cloud computing represents one of the main maturing technology trends driving digital service innovation. As a result, changing the manner in which business is conducted today in all sectors of the economy and this manner will increasingly change going forward. This conclusion is derived from a consensus in the literature that the shift of computing resources from scarcity to abundance has enabled this shift, as it addresses the following long-time challenges: the continuous need for capital investments, the rising IT costs and the increasing energy consumption (Markovic, Branovic, & Popovic, 2014).

Over the years, computing has moved from being more centralised in mainframes to more decentralised in personal computers and now again more centralised, in a cloud computing architecture. While the computing architecture on a simplistic level has returned to more centralised architecture, the architecture has moved away from vertical and horizontal architecture to more circular. The increased efficiencies in

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computing resources are what drives this technology trend and this is realised through virtualisation of servers. To understand the architecture for cloud computing, the work of Zota and Petre (2014) covers cloud computing reference architecture for Cisco, IBS, VMWare and the National Institute of Standard and Technology.

Cloud computing is a technology branding of sorts for a rising technology trend towards pooling or sharing of computing resources for services such as: platform as a service, software as a service, storage as a service, etc. (Zota & Petre, 2014). Typically, these are found with a lease or rent business model, removing the barrier of capital investment, making the computing resource move from scarce to abundant. It is the increasing complexity together with management costs of IT that are almost forcing firms to look at new ways of addressing their IT needs, and hence the move towards cloud computing. In addition to addressing these needs or challenges of large enterprises, cloud computing has presented a whole set of opportunities for start-ups of digital services, funding is limited and these start-ups have limited access to resources, perfect for deploying their services in the cloud. This in itself has placed traditional business models and incumbents with strong organisational momentum under threat from disruptive innovation of these start-ups or agile companies that launch their services in the cloud (Carinean & Candea, 2013).

The technology trend of cloud brings about numerous challenges for many actors in the digital ecosystem, as seen when evaluating using industry architecture and platform theory. Primary actors in this smartphone or digital ecosystem continue to react to these changes, with limited success, as the platform constraint, the key control point, is moving away from the device and in to the cloud as a meta-platform based on the internet. No longer does the physical device, operating system or even the mobile network keep ultimate control (Pon, Seppälä, & Kenney, 2015).

Software development and software provision are shifting to platforms based on the web and represent cloud models such as Software-as-a-Service (SaaS) and Platform-as-a-Service. These models represent an opportunity equally for mobile operators for new sources of revenue by exposing different network functionalities through web-based platforms with the advantage of customised mobility (Goncalves & Ballon, 2011). It is argued that mobile operators mobile web services are moving from Software-as-a-

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Service to Platform-as-a-Service but MNOs will face many challenges in future due to fragmentation. The Software-as-a-Service model is an improvement on the Application Service Provider (ASP) model, which includes scalability, configurability and efficiencies for many tenants. It is found that SaaS can be enterprise-focused, or consumer focused like examples of dropbox and google docs (Goncalves & Ballon, 2011).

Platform as a service (PaaS) provides software providers with the ability to focus on the software development lifecycle, the business models of new applications without the complexities of the platform and related investment and maintenance needs. From a business context, the shift towards the platform as a service provides a mediation between the demand and the supply side of the platform. PaaS provides service exposure to different capability and resources, dependent on the need; this is facilitated via APIs (Goncalves & Ballon, 2011).

2.6.2 Internet of Things (IoT) and Big data

Mobile telecom operators have been providing SIM cards to enterprises for Machine-to-Machine (M2M) applications, car tracking companies predominantly. These SIM cards are sometimes a special type in the surface mount electronics in order to be soldered into the product or application electronics circuitry. These SIM cards and telemetry solutions generate data and require remote management, the platforms to deliver these services have become of increasing focus for MNOs using platform as a service type models.

In addition to new cloud type services, the next service innovations for MNOs could present itself from an increase in retails services in the mobile space. These are from additions and packaging of traditional mobile services, to utility services, games and even education. What trends are apparent with regards to this is:

- Mobile broadband in still new in certain segments
- Content driven service or applications
- TV on demand and digital TV

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- An increased range of service providers, IT services, banking, mobile payment, content providers

By linking several streams of literature, the construct of the Internet of Things (IoT) is found to provide a suitable conceptual framework to assist in the understanding of the digital service ecosystem and indicates weak signals as to where some opportunities will come from for the next service innovation in the telecoms space. It is even argued that understanding the network dynamics assist in developing and implementing business models for service innovations (Andersson & Mattsson, 2015).

In the political and socio-economic debates, it is common for the argument to be made for the dependency on the service innovation for efficiency, growth, employment and global competitiveness, all pointing to an increase in living standards in society. While not always referenced by the IoT construct, it is in fact central to this argument. The predominant focus of IoT between academics and business has come mainly related to technology, infrastructure and the suppliers of these. IoT is a branding or label that is more recent from developments in the ICT industry, and represents the wireless and wired internet connectivity structure for all things, from people, objects or collection of objects using radio communications, sensors and actuators to provide monitoring and control over this network (Andersson & Mattsson, 2015).

Due to pervasive connectivity, fall in costs for computing power and memory in electronics of much smaller dimensions, the IoT examples are increasing across many sectors of the economy. This results in digital technology being attached and embedded into products that traditionally are not digital, from home appliances, cars, bikes and even pets and children. This is reshaping the structure of the products from the industrial age, making understanding the new business models imperative for the Internet of Things, and how this influences digital service innovation (Dijkman, Sprenkels, Peeters, & Janssen, 2015).

Frameworks exist for identifying the elements needed in a business model, allowing new business models frameworks to be developed specifically for IoT (Dijkman, Sprenkels, Peeters, & Janssen, 2015). This framework defines the building blocks that

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are relevant to IoT, with the relevant importance of each of these building blocks and types. All these objects and sensors connected to the internet is generating data, and with millions of things connected, the data is expected to continue to grow exponentially. This big amount of data will need processing, it is argued that all this data from the internet of things will be stored and processed in the cloud.

The term big data came about to describe data that is too big for conventional systems to handle, as Edd Dumbill describes via (Gobble, 2013) the data may be big in size as there is too much (volume), and or because it is moving too fast (velocity) or because it is not structured in a usable way (variety). Back in 2011, Mckinsey Global report pitched *Big Data: The next Frontier for Innovation, Competition, and Productivity.*

The opportunity for digital service innovation from big data will again come from how business managers cognitively view this data, like how these managers will need to shift their understanding of products and services. The biggest data is not coming from people but rather from machines, linking to the IoT construct or even Web 3.0 (Gobble, 2013).

Big data is a key part of the innovation success for companies, as found by (Marshall, Mueck, & Shockley, 2015) from 341 respondents, the analysis found that those organisations using big data and analytics were 36 percent more likely to beat their competitors in terms of operating efficiency and revenue growth. Also found was that outperforming organisations are 23 percent more likely to use analytics tools. The leaders in this group were found to use three main strategies, i.e. promoting excellent data quality and accessibility, make analytics and innovation a part of every role, build a quantitative innovation culture. Examples of these strategies are provided, by looking at Monsato, Alibaba and Tata.

The need for organisations to change the skill-set of their human capital with regards to big data is one the key opportunities, or threats if the competition is finding ways to do this more effectively and faster. Depending on the industry, this could be executed with an up-skill program and strategic hires but typically, if the transformation required is

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much larger, then a re-structuring is found to be the approach taken by the subject of the work by (Gabel & Tokarski, 2014).

Data driven mathematical tools place insight at the hands of business managers, ultimately needed for digital service innovation. It is found that there are still inherent technical limitations of changing the operating model of a business to support big data and analytics. The seizing of quick-win big data opportunities or the application of it, is led by astronomers and biologist in their field of research. In terms of technology development in the big data Google is well known for their open source work on platforms like Hadoop and extensively enabling the adoption of big data technologies by web based companies like Facebook (Jagadish, et al., 2014).

In business today, the decision making process has become increasingly data-driven. With increased digitization the core business of companies across many sectors has to rely on large and diverse volumes of digital data that are continually being produced. The intangible and information centric characteristics of service-dominant logic are suitably relevant to the understanding of value for big data and vice versa (Lusch & Nambisan, 2015).

2.6.3 Business model innovation

The technology and digital service trends of today prompt organisations to define innovative business models to leverage the opportunities in digital services by capturing value in non-traditional ways. The following list covers some socioeconomic and technology trends (Pisano, Pironti, & Rieple, 2015):

- Mobile
- Social
- Cloud computing
- Internet of things
- Big data
- TV on demand
- 3D Printing
- Crowd funding

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- Gamification
- Smart object
- Sharing economy

These trends are transforming the business landscape and central to all these trends is technology, however understanding technology with a goods-dominant logic from the industrial age is not sufficient for companies to transform favourably along these trends. A new understanding of service-dominant logic (Lusch & Nambisan, 2015) is needed to unlock an enabling lens to begin defining innovative business models in the intangible digital services ecosystem. The take up of intangible services offered by the ICT industry by a variety of actors will increasingly mirror experiences of the tangible or physical world (Pisano, Pironti, & Rieple, 2015).

The importance of business model innovation, or the use of correct business models for capturing value from innovations have been around for some time (Chesbrough & Rosenbloom, 2002), however these insights need to be refreshed using the latest socioeconomic and technology trends. This is relevant given the context of this review and the linkages to digital service innovation for the ICT industry. What is evident from the literature review on business models is the lack of actionable aspects or insights from which IoT enabled, or connected and digital service companies can adopt business model frameworks to identify and take opportunities (Robles, 2015) . It was also found that the trade and regulatory liberalization provides market choice and moved the conceptual understanding of value creation beyond the business model (Keen & Williams, 2013).

This section was dedicated to reviewing the next service innovation in the telecoms space, and it was evident from the literature review that this will not come from a single dimension but will be made up of a combination of resources, to be understood best by a few conceptual constructs. It is for this reason that this section explored cloud computing or XaaS, as it represents the IoT and the big data it generates, together with the analytics and business model frameworks, in order to capture the value of service innovations enabled using these constructs.

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2.7 Emerging view of digital service innovation

From this review, and in particular from Section 2.6 the understanding of the digital service innovation construct emerges from the increasing shift in focus towards digital services, enabled by digital computing and connectivity, and this is evident in all socioeconomic sectors. In addition to the service-focus, there is a digital transformation taking place across all sectors and technology domains driven by the continuous innovation and development across the ICT space which includes mobile telecommunications, the Internet and high-tech sectors. The traditional way to think of services and even of innovation is changing due to this pervasive digitization as explored in Section 2.6. To guide this research, the literature review began with reviewing this change in understanding of services and innovation based on the recent theoretical work done on digital service innovation (Barrett, Davidson, Prabhu, & Vargo, 2015). The findings from this review found the understanding to be aligned to more established lenses from the Marketing and Information Systems disciplines but it was interweaved within the digital context to provide new insights on service innovation (Lusch & Nambisan, 2015). These insights have assisted in shaping this exploratory case study in order to gather empirical evidence to validate these recent theoretical insights.

While the operating and business models of businesses across the spectrum are transforming to leverage the digital revolution and to avoid disruption, there is a critical need for one of the key enablers of the digital revolution, i.e. MNOs to understand this emergent view of digital service innovation. As MNOs have the opportunity or challenge to drive this digital transformation, both within their core business processes for mobile service consumers and enterprises seeking ICT services from MNOs, and also while MNOs transforms the business processes of client businesses due to pervasive digitization trends. MNOs present digitization of information on a large scale as a result of the mobile network and IT infrastructures that collect, process, distribute, and utilize this information. It is these activities that enable radically new re-combinations of physical and digital components to produce novel products and services (Yoo, Boland Jr., Lyytinen, & Majchrzak, 2012).

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3 Research Questions

3.1 Introduction

What remains today amongst MNOs as well as many product-developing firms in other sectors, is the product centricity approach from the industrial age. This prompted the focus and definition of the research question, specifically in defining a framework in which data could be collected from MTN addressing questions within an African context. To define the boundaries of this exploratory research, the ecosystem of the mobile telecoms industry was reviewed and the industry structure was defined.

Based on the literature review, what emerged was the convergence within the ICT and high-tech sector (Borés, Saurina, & Torres, 2003; Pon, Seppälä, & Kenney, 2015), and in now looking at digital transformation, are all sectors coupled with potential disintermediation of mobile network operators (Kenney, Rouvinen, & Zysman, 2015)., Digital service innovation is a critical part of the MNOs business strategy for survival, especially in the face of commoditization and even disruption to their core business model (Tusa, Singh, & Chan, 2015; Karpinski, 2008).

3.2 Research Question 1: How does digital service innovation take place in Africa?

The above exploratory research Question 1 emerged from the literature review. To answer this question using a single case study method, the themes that emerged from the literature review where used together with sub research questions. These sub questions will guide more precise findings and literature themes will provide the structure of the findings in chapter 5 and chapter 6. The findings will improve the understanding for MNOs (especially MTN) in Africa.

3.2.1 Research Question 1a

The growth of telecommunication in Africa has been huge over the last decade with large investments in the required technologies across the continent and is expected to

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increase going forward (Jackson, 2014). To accommodate this market and its demographics, many innovations have been launched by MNOs. Service innovation in Africa exists in mobile money services. M-Pesa was introduced by mobile network operator (MNO) Safaricom in Kenya, and was an early revolutionary mobile money transfer service, a perfect storm with the correct factor conditions, a market need, regulatory window, and organisational will. This mobile money service introduced a service innovation to the world, and has since become increasingly popular across the African continent, with 70% of all mobile money transfers in the world, taking place on the African continent (Jacobs & Walker, 2014).

Given this anecdotal evidence of service innovation as a requirement for doing business in Africa, the following research question has been devised.

- Question 1a: Is digital service innovation required by MNOs in Africa?

3.2.2 Research Question 1b

There have been a number of challenges identified for MNOs operating in Africa in sustaining their growth. Firstly, a decline in average revenue per user (ARPU), and profitably, is a concern for MNOs globally, providing the motivation for these companies to pay attention to the trends in the digital ecosystem (Tusa, Singh, & Chan, 2015). Second, mobile network operators (MNOs) and their revenues are facing disintermediation of their tradition from SMS and voice services (Kenney, Rouvinen, & Zysman, 2015). Innovative new business models from social platforms like Whatsapp, introduce (cheaper or free) substitutes to consumers for the same services, such as Whatsapp messaging and voice calling or free Wi-Fi internet access in public spaces or retail outlets.

In addition, there has been undisputed convergence within the Information, Communications and Technology (ICT) industry. The ICT convergence is understood as the coming together of the following industries telecommunications, internet, information technology (IT) and high-tech sectors, in such a way that the technologies in equipment, devices and platforms are increasingly more coupled allowing for

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convergent services to be offered by firms across sectors (Borés, Saurina, & Torres, 2003; Pon, Seppälä, & Kenney, 2015).

Given the variety of challenges that face MNOs in Africa, we test the theory by asking the following question:

- Question 1b: What is the constraint for the execution of MNOs growth strategy in Africa?

3.2.3 Research Question 1c

A key focus area of MNOs for the next digital service innovation is cloud, with the trends in increased cloud consumption. Cloud computing maybe described in ICT as XaaS, i.e. anything as a service, covering Platform as a Service or Infrastructure as a Service, Software as a Service, etc. The major drive for this is derived from the value proposition of anything as a service (XaaS), which includes the speed of deployment, fewer skill requirements, business agility and on-demand capacity and scalability (Gerhard, Cordero, Reberger, & Dolan, 2013).

In addition to new cloud type services, the next service innovations for MNOs could present itself from an increase in retails services in the mobile space. These are from additions and packaging of traditional mobile services, to utility services, games and even education. What trends are apparent with regards to this is mobile broadband; content driven service or applications; TV on demand and digital TV; and an increased range of service providers, IT services, banking, mobile payment, content providers.

By linking several streams of literature, the construct of the Internet of Things (IoT) is found to provide a suitable conceptual framework to assist in the understanding of the digital service ecosystem and indicates weak signals as to where some opportunities will come from for the next service innovation in the telecoms space.

Given these new potential strategies that may be adopted, the question that naturally arises to MTN, as an MNO operating in Africa is:

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- Question 1c: What are the strategies for MNOs in Africa to increase service innovation and value co-creation?

3.2.4 Research Question 1d

The technology and digital service trends of today prompt organisations to define innovative business models to leverage the opportunities in digital services by capturing value in non-traditional ways for example mobile, social, cloud computing, IoT, Big Data, TV on demand and crowdfunding (Pisano, Pironti, & Rieple, 2015). A new understanding of service-dominant logic (Lusch & Nambisan, 2015) is needed to unlock an enabling lens to begin defining innovative business models in the intangible digital services ecosystem.

As such, research question 1d tests:

- Question 1d: How does business model innovation capture value from the trends in the digital service ecosystem?

The above sub research questions provide a direct link to the overall main research question. The themes from the literature review together with these sub questions will provide support to structure Chapter 5 and 6 in answering research Question 1, as a way to provide precision to the findings.

3.3 Themes from literature review

The following is the list of themes that emerged from the literature review and was used to analyse the data collected. These themes supported the layout of the findings in Chapter 5 and anchored the discussion in Chapter 6 around the above research questions.

- Goods vs services
- Service innovation at MTN

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- Service ecosystem
- Service platform
- Co-innovation
- Business model innovation
- Customer trends

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4 Research Method and Design

4.1 Research Method

This research used a qualitative method, beginning broadly as an exploratory study, to help refine the problem definition or research questions related to digital service innovation for the case of mobile telecoms in Africa. This was a key step in the method before developing a complete case study of digital service innovation at MTN within the digital service ecosystem.

The qualitative data was gathered from semi-structured interviews for a single case study; a case study is defined by Yin (1994, p. 13) as: "…an empirical enquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence is used."

This is particularly relevant for the topic of innovation within the digital service ecosystem in the case of mobile telecoms in Africa. The use of quantitative statistical methods as a primary tool of analysis for digital disruptive innovation or even digital service innovation would not be useful enough for the research objectives as the variables are complex, interwoven and difficult to measure for such a field of research.

The case study method is appropriate to test some theories already developed in the fields of Information Systems, Marketing, Strategy and Economics related to the research objectives of digital service innovation in Africa using the case of mobile telecoms. Schweizer (2005) states that case studies are most appropriate where there is a clear need for deep understanding local contextualisation, causal inference, and exposing the points of view for people under the study "and particularly in studies which focus on industry sectors which incorporate high-tech firms and how they "gain access to the know-how, technologies, and capabilities" (Schweizer, 2005, p. 1055).

There was a plan for the case study to attempt to use methodological triangulation with mixed methods towards the latter part of the research, i.e. to source and analyse

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secondary quantitative data and compare to the qualitative data that was collected. Triangulation as mentioned in Freeman et al. (2012) is important to increase construct validity and to substantiate findings and subsequent findings. The reason for combining methods and the theory base was to justify and build confidence around the findings derived from the analysis of the data; however the sourcing of the secondary quantitative data was not accomplished, as the barriers (money and time) to access quantitative data related to digital service innovation was underestimated.

The intention of using this type triangulation at the tail end of this research was to attempt to move from an exploratory research to an explanatory causal design. This was to be achieved in a way that will make use of the findings from the analysis of the qualitative data collected and secondary quantitative data related to the digital service ecosystem in Africa. This part is recommended for future research. The triangulation method that was used to build confidence in the findings was theory triangulation. Different theories were used to interpret the collected data, and hence the broad exploratory nature of the literature review was adopted.

An abductive approach was followed in this study, similar to that of Dubois and Gadde (2002) in which literature is used to suggest introductory research questions. Thereafter, movement back and forth between the data and theory assisted with the interpretation of the findings and aided with the development and conclusion of the research questions (Freeman, Hutchings, & Chetty, 2012).

4.1.1 Informed consent

The CMO and CSSO of MTN South Africa provided the informed consent in order to conduct this research at MTN.

4.1.2 Scope

The scope of the data collected was limited to the MTN and was based on a single case study.

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4.1.3 Interview guide

Consistent with Freeman et al. (2012) and Schweizer (2005), this study used an interview guide that conducted semi-structured interviews with MTN representatives in order to obtain an appropriate level of comparison between the respondents. In addition, this allowed opportunity for unobstructed feedback and narration. Interviews covered themes of service innovation and service-dominant logic.

4.2 Research Design

The research subject is based within the broad context of strategic service innovation together with specific focused themes from an adapted-combined model of digital service innovation. This digital service innovation model is based on the broad view model of service innovation (Lusch & Nambisan, 2015) together with the double helix model of co-innovation (Pagani, 2013). This adapted-combined model was used in order to understand the platform and user innovation aspects of digital service innovation in Africa for the case of mobile telecoms, and specifically MTN Group within the digital service ecosystem.

The research was comprised of the following three stages:

4.2.1 Phase One

Phase one involved desk research on publicly available information and reports on the case subject, i.e. scanning the publicly available integrated annual and financial reports together with media reports of partnerships and service launches. This formed part of the preliminary exploratory research to gather relevant qualitative and quantitative data on the subject, i.e. MTN Group. It assisted with preparation for the semi-structured interviews in phase three by ensuring the business and organisational context is extensively understood. This was done to ensure a level of preparation on the case company, despite the researcher being in the employment of MTN for five years and telecoms experience for eight, with experience in roles both in the technology and business domains.

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4.2.2 Phase Two

Phase two involved qualitative data collection from semi structured interviews with individuals across the MTN departments, at the major operating companies within MTN Group, the subject of this research. This phase also included coding and thematic analysis of this data in Atlas ti to broadly map the collected data to the defined problem area and describe the findings. According to Saunders and Lewis (2012), the best way to conduct exploratory research is to search the academic literature, interview 'experts' in the subject' and to conduct interviews.

4.2.3 Phase Three

Phase three involved aligning the findings from phase one and two together with the write up of the case study. The original plan was to also include as part of this phase, further exploratory research by analysing the gathered secondary quantitative data that is relevant to the research objectives. This was intended to be part of the methodological triangulation efforts to further describe and explain the findings, by quantifying the digital service innovation opportunities, and to attempt to move to an explanatory causal design that will make use of the findings from the qualitative data collected and relevant secondary quantitative data. This is now part of the recommended research for future. As mentioned, only the qualitative data collected was analysed with theory triangulation to explain the data, but the analysis of the secondary quantitative data was not accomplished, as the barriers (money and time) to access quantitative data related to digital service innovation was underestimated.

The case study mainly focuses on the analysis of the findings from the semi structured interviews that include open and close ended questions. Also included, is a summary of the desk research of the public company information from the integrated annual reports and media related to strategy, technology, innovation, business performances and partnerships.

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4.3 Unit of analysis

The unit of analysis captures the level at which the research will be executed and defines the research of which subjects (Blumberg, Cooper and Schindler, 2008). The unit of analysis for this research is based on an 'embedded' case study design, with intentional sampling of specific individuals based on their job role and responsibility across Marketing and IT departments at up to five of the major operating countries within MTN Group in order to collect qualitative data that maps to the themes in the research objectives. The overall unit of analysis of the research is a single case study of MTN Group within the broader digital service ecosystem. The roles of these individuals will be as executives, general managers, senior managers, product development managers, solution architects, engineers and ICT system or network specialists.

4.4 Population of relevance

The researcher made some inferences about mobile telecommunication companies in Africa within the context of digital service innovation. The single case method is often criticized if the findings are extrapolated to match an entire population. The researcher argues here that due to the limitation of the case study method, the population will not be service industries globally and not even the telecoms industry globally. The population will be limited to the population of mobile telecom companies in Africa and is justified and suitable as the case study method is extremely effective within the contemporary phenomena of digital service innovation using MTN group as the subject. These mobile telecom companies in Africa make up the total group of elements. The population elements represent the subject on which the measurement will be taken (Blumberg et al., 2008).

The single case study of MTN Group is argued to be representative of the population due to the following reasons. MTN Group is the largest African telecoms group, with 18 of its 22 network operations in Africa. There are a total of 175 GSM mobile networks operated by 130 companies operating across 56 African countries and islands. This provides a geographic coverage of **32%** in terms of mobile telecom markets across the African continent and **10%** in terms of coverage of GSM networks operated in Africa.

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Based on these coverage figures of 32% and 10%, it is argued that some inferences will be possible for the population of relevance, i.e. mobile telecom operators in Africa.

From the latest MTN interim results report (MTN Group, 2015), MTN is connecting 230 million people with 172.9 million in Africa (see table 5.1 below, excluding Iran, Cyprus, Syria, Yemen, and Afghanistan). MTN as a sample of MNOs in Africa, provides coverage of about **35.79%** of the total mobile subscribers in Africa. Total mobile subscribers estimated in Africa for closing Q2 2015 is: 483 million (GSMA Intelligence, 2015). Thus, MTN has 35.79% of the total mobile subscribers from all African markets, with a presence in 18 African markets.

Table 2: MTN Subscribers in Africa, (MTN Group, 2015)

Market	Million
Ghana	14.9
Ivory Coast	8.5
Nigeria	62.8
Cameroon	10.4
Sudan	8.8
Uganda	11.1
South Africa	28.5
Small OpCo Cluster	27.9*
MTN Subscribers in Africa	**172.9**

*33.5 million adjusted by 10/12 factor for 2 non-African markets

4.5 Sampling method and sample size

Non-probability purposive sampling is the main technique employed for both levels (organization and individuals) of the embedded case study design but the convenience to the researcher of choosing MTN at the single organisation level is acknowledged and accepted as convenient sampling. As this research is based on an 'embedded' case study design with the overall unit of analysis being a single case study of MTN Group, the high level sample is purposeful sampling due to the coverage figures of 32% and 10% and MTN Group is the largest African telecoms group with 18 of its 22 network operations in Africa. MTN Group as the subject it is also convenient sampling

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because the researcher is employed within the organisation but is argued to not be the primary driver. MTN Group with these coverage figures in relation to the population of relevance is argued to allow for some representation of this population as discussed in Section 4.4.

From the embedded case study design, the secondary level of sampling is on the specific individuals based on their roles and responsibilities across Marketing and IT departments at up to five of the major operating countries within MTN Group. This is based on stratified purposeful sampling in order to collect qualitative data from individuals in specific roles so that the data collected maps to the different themes in the research objectives. The themes are further supported and guided by the digital service innovation model discussed in Chapter 2 and section 4.2 above. The breakdown of the stratified sample size per theme is captured in table 1 below with five to seven interviews per strata.

4.6 Detail of data collection

This research used an 'embedded' case study design with the overall unit of analysis being a single case study of MTN Group in the digital service ecosystem in Africa. Chapter 5 will cover this case by describing the findings of this research from the collected data. Two sets of data were collected:

1) Secondary data was collected from MTN 2014 Integrated Reports and 2015 Interim Results report. In addition, other non-sensitive internal MTN documents were used to gather further data and evidence related to the research themes.
2) Primary data from face-to-face semi-structured interviews with MTN executives and senior managers across Marketing and IT as described in Section 4.2.2 .

The data was triangulated with different theories to validate the findings for each of the research themes. For the population of digital service innovation in Africa, using MNOs as a case, the primary level sample technique, is non-probability purposeful sampling of the MTN Group. This is motivated by MTN being the largest mobile telecoms group in Africa, as MTN represents a presence in 32% of the African markets, also represents

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10% of all GSM mobile networks built in Africa and also represents 35.79% of all mobile subscribers found in Africa. As mentioned in the previous section, MTN Group as the subject it is also convenient sampling because the researcher is employed within the organisation but is argued to not be the primary driver. MTN Group with these representation figures in relation to the population of relevance is argued to allow for some representation, and hence some inferences about this population as discussed in Section 4.4.

The secondary level of sampling for this embedded case study design is on the specific individuals employed at MTN, based on their roles and responsibilities across Marketing and IT/network departments at up to five of the major operating countries within MTN Group. This is based on stratified purposeful sampling in order to collect qualitative data from individuals in specific roles so that the data collected maps to the different themes that emerged from the literature review and the research objectives as discussed in Section 4.5.

4.6.1 Model and interview plan

The semi structured interviews was guided along the themes found in the digital service innovation model, a model that is adapted and combined from Lusch & Nambisan (2015) and Pagani (2013) as discussed in Chapter 2 and depicted in figure 1 below. The model combines the broad view model of service innovation (Lusch & Nambisan, 2015) with the double helix model of co-innovation (Pagani, 2013) in order to understand the platform and user innovation aspects of digital service innovation in the case of mobile telecoms in Africa, and specifically MTN Group.

The interviews included individuals across the Marketing and IT departments at the major operating companies within MTN Group. The roles of these individuals are executives, general managers, senior managers, product development managers, solution architects, engineers and ICT system or network specialists. The data collected from the interviews, with the different roles, were coded and mapped to a specific theme for analysis or to an element of the model as captured in table 1 below.

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By Combining the broad view model of service innovation (Lusch & Nambisan, 2015) with the elements listed part of Service-Dominant logic and the double helix model of co-innovation (Pagani, 2013), it provides an opportunity to understand the context of the platform and user innovation aspects of service innovation in Africa, using MNO, MTN. This adapted double helix model with the broadened view of service innovation, found in Figure 4.1 below.

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Figure 4: Digital Service Innovation Model (adapted from Lusch & Nambisan (2015) and Pagani (2013))

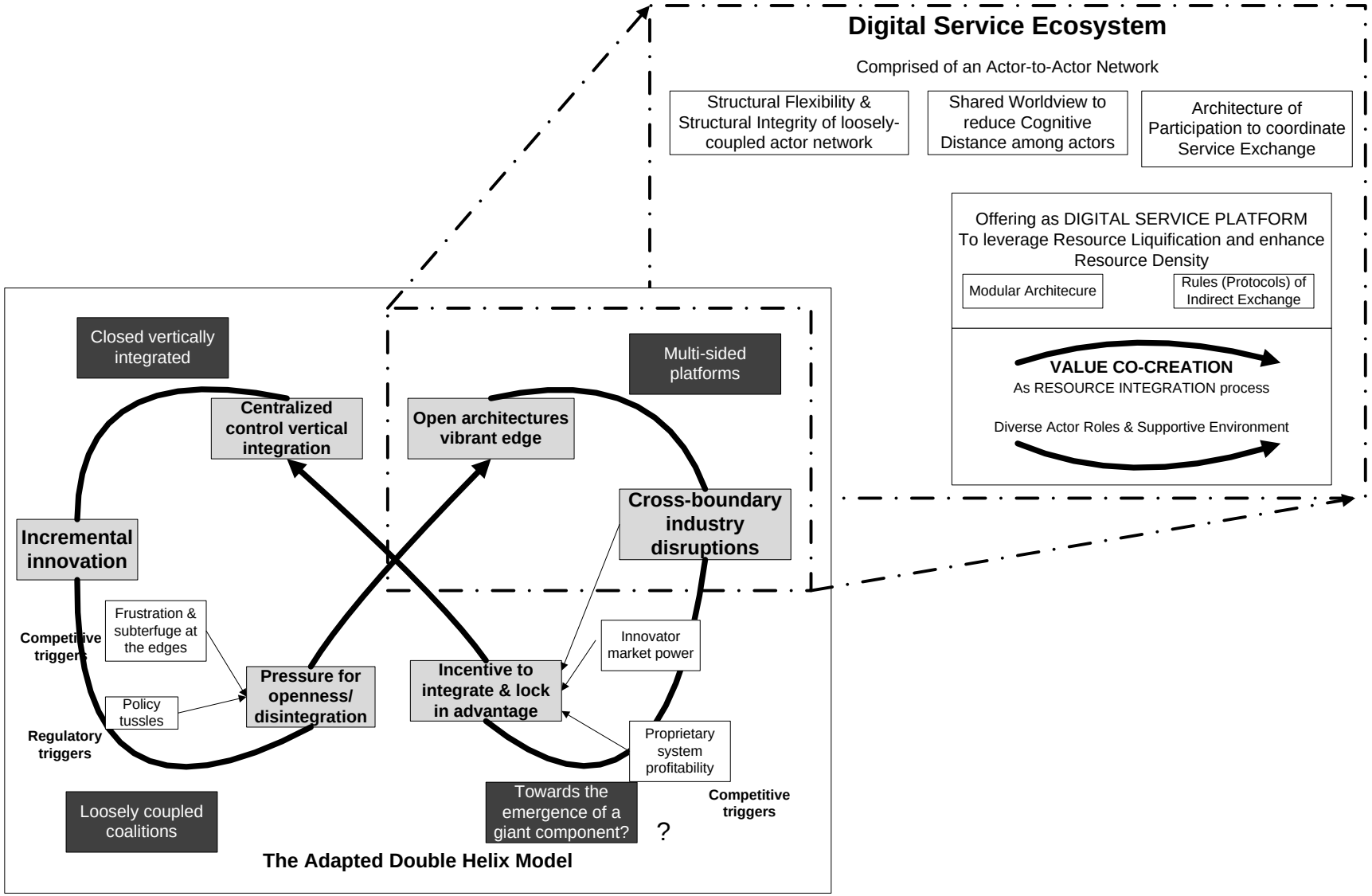

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Table 3: Interview plan mapped to themes in the digital service innovation model that is linked to the research objectives.

Level of Service Innovation	Themes or topics	Roles in MTN	No. of interviews	Geography of operating companies
Ecosystem	-Structural flexibility and structural integrity of the service ecosystem -Shared worldview among a set of cognitively distant actors - Architecture of participation to coordinate actors and their service exchanges.	Executives and Senior Managers of Marketing, and IS,	Seven	MTN Group – covering all 22 countries plus focus on South Africa, Nigeria, Uganda, Ghana
Platform	- modular architecture that enhances resource density -Rules of exchange or protocols for indirect exchange of services through the service platform	CIO and Senior Managers in Product Development, IT, Solution Architects and IT specialists	Five	MTN Group – covering all 22 countries plus focus on South Africa, Nigeria, Uganda, Ghana
User co-innovation	- key roles and the nature of value appropriated by each actor - supportive environment for resource integration: (1) mechanisms to facilitate interactions among diverse actors, (2) adapting internal processes to accommodate different actors (3) enhancing the transparency of resource integration activities in the service ecosystem	Product Development Managers and mobile or web application developers.	Five	South Africa, Nigeria, Uganda

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Before the interview, the interviewee received a short description of the interview and a guide to the themes to ensure a certain amount of preparation. A consent form was signed by each of the interview participants, detailing the purpose of the study, the costs and benefits of participating in the study, together with an assurance of confidentiality and the steps to be taken to ensure confidentiality. The form also included a statement that participation was voluntary and the participant can end participation at any time without penalty.

4.7 Process of data analysis

With 17 interviews completed, a large amount of data was collected from the recorded interviews. This research was one of the topics selected for research funding from the GIBS Dimension Data Digital Disruption Programme, which allowed the transcribing of the interviews to be outsourced by making use of the available budget.

The transcribed data from the recorded interviews were used for thematic analysis. To do this analysis, first the transcribed interviews were imported into Atlas ti and the coding was done. As part of the thematic analysis, network diagrams were created to show the relationships between themes and constructs. The thematic analysis ensured a focus on specific themes found within the data that was relevant to the themes identified in the literature review and Table 4.1 as it relates to the model of digital service innovation. The analysis process began from after the first interview, as the majority of this research is still exploratory, concurrent analysis of the available data served as leads for subsequent interviews and also assisted to identify data saturation to steer the conversation to areas of new insights related to the core themes.

Overall, this qualitative analysis adopted a process of interpreting data, and moving back and forth between data and research questions to develop the conceptual framework of the research. This dynamic process allowed the researcher to obtain deeper insight after each re-reading and allow for more robust data sorting and categorisation (Freeman et al., 2012). Data reduction was achieved through selecting, summarising and coding efforts. Manual coding of the data was conducted. Thereafter

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"formative indicators" (Freeman et al., 2012, p.435) were combined to build a comprehensive understanding of digital service innovation within MTN.

4.8 Limitations of Research

A great deal of caution was taken to not make any general business conclusions, as the case method is not well suited for such endeavours. As discussed, the single case method is often criticized if the findings are extrapolated to match an entire population. The researcher argues here that due to this limitation of the case study method the population will not be service industries globally and not even the telecoms industry globally. To provide some meaningful insights, the population will be limited to the population of mobile telecom companies in Africa and is justified and suitable as the case study method is extremely effective within the contemporary phenomena of digital service innovation using MTN group as the subject. Further limitations within the subject exists for smaller operating countries as the samples of interviews limited to individuals with extensive in country experience that is asymmetric to the major operating countries, thus offering more insights on these major MTN African operating countries compared to some of the smaller countries. This could lead to a skewed geographic view with heavier weighting of information from South Africa, Nigeria, Ghana and Uganda. This was still suitable as it is argued that these are the most influential mobile markets in the region and it was not deemed necessary as part of the exploratory research to seek further suitable geographic representation.

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5 The case of MTN

Table 4 represents the summary of the key codes, categories, and themes from the analysis done in Atlas ti. These were mapped to the literature themes that emerged from the literature review in Chapter 2. The network diagram at the end of this chapter in Figure 6 represents the relationships between the top 25 codes that further emerged from the analysis of the data. Figure 6 is discussed in Section 5.8.

Table 4: Summary of main Codes, Categories, Themes, and Theory

Codes		Category	Themes	Theory
Services network innovation access support authenticate core business	B2C sustainability Bank of Athens Alignment App developers	**Partnerships**	**Service ecosystem**	**SDL Service Innovation**
Platform Service Exposure products systems Applications	Innovation Digital Acquisition API SIM cards Platform architecture	**Technology**	**Service platform**	**SDL Service innovation**
Digital IoT Metrics Competitive	Analytics Business model KPI advantage	**Big data**		
Authenticate Platform Ecosystem Connectivity	Xaas PaaS IaaS SaaS	**Cloud**		
Value proposition Revenue Cost Business partners	Brand Value capture KPi Customer base	**Value offer & capture**	**Business model innovation**	**Business model innovation SDL Service Innovation**
Services Innovation Service interaction Service UI Menu Service delivery Service personalisation Facebook Google Circular architecture	Digital Customer Device Technology Content Platform IoT Big data Cloud M2M	**Ecosystem** **Platform** **Business model innovation**	**Digital service innovation**	**SDL Service innovation**

5.1 Introduction

Digital service innovation in Silicon Valley is extensively written about, but what is not so common is how this phenomena happens in Africa. Most of the writings were found to have insufficient theoretical foundations with others providing weak arguments as to

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how or why the transfer of these innovations have worked or not in Africa. Thus, what guided the focus during the data collection process from MTN and even while writing up the case of MTN, was the research question:

Research Question 1: how does digital service innovation take place in Africa?

The layout decision of the findings was not an easy one, especially for an exploratory study with such varied complex themes, despite the confidence derived from the literature review that there are definitive linkages between these themes to assist in answering the research question. This research had one main exploratory research question, as a way to enable an exploratory case study, it was not appropriate to structure this chapter by the main research question, rather the layout of the findings will be according to themes that emerged from the literature review and the data collection. These themes were used to structure this chapter, using a single case study method of MTN and the themes were defined as; Goods vs services, Service innovation at MTN, Service ecosystem, Service platform, Co-innovation, Business model innovation, Customer trends and Digital service innovation in Africa.

5.1.1 Structure of findings: Literature review themes

- Goods vs services
- Service innovation at MTN
- Service ecosystem
- Service platform
- Business model innovation
- Digital service innovation in Africa

Before covering the findings across these themes, the MTN context in Section 5.2 will be covered prior. This was done to ensure that the presentation structure of the qualitative findings demonstrates a definitive logical flow to Chapter 6, enabling a natural transition to the theoretical arguments, discussion of the findings and contribution to the theory. Some of the data points (quotes and extracts) collected on the subject (MTN) from the desk research and the semi-structured interviews mapped to more than one theme, as a result, some data is used to describe and explore more than one theme.

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In addition to these themes from the literature review, the research objectives for this research was used to guide more precise findings. These themes, research objectives and interview questions emerged from Chapter 2 literature review and were designed as part of the research method in Chapter 4, and will also be used in the discussion of the findings in each of the thematic sections.

Extensive interviews were conducted with seventeen (17) MTN executives, senior managers and technical experts. The sampling of these individuals were based on stratified purposeful sampling in order to collect qualitative data from individuals in specific roles, in such a way that the data collected maps to the different themes in the research objectives and with sufficient geographic representation of the MTN markets. These MTN employees were selected from across Marketing and IT departments, containing a mix of executives, senior managers and technical experts with current experience and responsibility in mobile telecoms covering South Africa, Nigeria, Uganda, Ghana, Iran, etc. The data collected from the interviews were processed in a computer-aided qualitative data analysis software (CAQDAS) known as Atlas ti and this chapter provides the processed and analysed information together with some key quotes and extracts.

Table 5.1 below provides the list of the seventeen (17) employees at MTN with whom the in-depth interviews were conducted. These interviews took place at MTN Innovation Centre, the head office based in Johannesburg, during office hours in boardrooms. The coding of Int1 to Int17 below was done to ensure care with regards mapping of the analysed data in Atlas ti to the description and discussion of the finding in Chapter 5 and 6. For the remainder of the research these MTN employees will be referred to using Int1 to Int17, however the roles of these individuals will also be provided were relevant to emphasise weighting but no names will be used.

Table 5.1. List of interview participants.

Code	Respondents Role or Responsibility
Int1	Technical Expert: SIMs, Security, M2M, IoT
Int2	Technical Expert: Rating, Billing, Charging, Service Provisioning
Int3	Technical Expert: Service Delivery Platform, Service Exposure, APIs

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Int4	Senior Product Manager: Instant Messaging, Voice, Roaming
Int5	Senior Manager: Customer Lifecycle Management
Int6	Technical Expert: Network Architecture, SMS, USSD, Signalling
Int7	Head of Department: MTN Mobile Money
Int8	General Manager: Group Digital Services
Int9	Senior Product Manager: Device Management, EBU IoT, ICT Services
Int10	CIO
Int11	Senior Group Principle: Products and Services
Int12	Senior Product Manager & Commercial Lead: Fibre to the Home
Int13	Senior Manager of ICT Service and Innovation
Int14	CMO and CSSO
Int15	Senior Group Principle: Digital Lifestyle Services
Int16	Senior Group Commercial Manager: Product & Service Development Processes
Int17	Senior Product Manager: Digital and Specialised Services

The sequence of the interviews were primarily selected based on a plan to start with senior technology specialists and senior product managers as a way to start with understanding the details of the service platforms and co-creation processes. The intention for this sequence was to allow this understanding to set the foundation for understanding the strategic debates in the service ecosystem and ensure a level of preparation in understanding MTN before moving to more commercial strategic managers and executives. This allowed bringing in to the conversation with more senior employees, findings and views from previous interviews that will help solicit further insight. The nature of some of these interviews were very informal based on the professional working relationship between the interviewer and interviewee, while some of these interviews covered a broad range of topics in an exploratory semi structured manner as per design, at times these interviews needed to be steered back to the main themes of the research by referring to the interview guide.

5.2 The MTN context

This understanding of MTN will set the scene for the analysis of the different research themes that is to follow. The context will provide an understanding of the core business of MTN, indicating which services are driving the revenue line, i.e. exploring the

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revenue streams, the ambitions of the company and related investments. Some of the company's philosophy or approach on digital service innovation will emerge in this context, but predominantly this will be discussed in the research themes to follow.

MTN is a "*leading emerging markets telecommunications service provider"* based in South Africa focused on emerging markets. It has 230 million customers, with operations in 22 markets across Africa and the Middle-east, holding the largest market share in 15 of those markets. MTN employs 22 204 people in these operations and has invested R118 billion on capital projects over the past five years. MTN is a leading African brand in terms of market capitalisation and holds over 50 different types of licenses. The following extracts will provide further context on MTN.

> *"We offer an integrated suite of communications products and services to our customers, including traditional and mobile voice and data, digital and mobile financial services as well as enterprise services to SME, public sector and corporate clients."*
>
> - MTN 2014 Integrated Report (MTN Group, 2015)

> *"To lead the delivery of a bold, new Digital World to our customers"*
>
> The MTN vision statement (MTN Group, 2015)

The MTN vision statement and extract from their 2014 Integrated Report provides an introduction to this MTN case study. The research question and title of this report will anchor the lens and dimension of this case write up of MTN. This means, each of the collected data points, will be analysed or processed with a digital service innovation outlook, given the African context. This will provide the opportunity in Chapter 6 for digital service innovation in Africa to be explored through the understanding of this contextualized environment and the analysis of MTN as a case via the subsequent case narrative.

MTN provides not only mobile voice and data but also provides digital and mobile financial services as well as enterprise services to SME, public sector and corporate clients. Official MTN statements (MTN Group, 2015), suggest that the business of MTN is diversified in services (beyond traditional mobile voice and data) and that MTN customer segments span consumers, corporate and government. While these statements are fact, the interesting information from Table 5 below (found in the same

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report), indicates that traditional voice and data services contribution to total revenues is 69.2 % and 22.3% respectively. This suggests that the business of MTN is only at the beginning of these stated ambitions, i.e. of leading a bold, new digital world to their customers (as is expected of a vision statement), but also that the revenues are still heavily dependent on mobile voice, proven to be of unanimous concern for MNOs globally.

Table 5: MTN Group revenue analysis (first 6 months of 2015), (MTN Group, 2015)

	Actual (Rm)	Prior (Rm)	Reported % change	Organic % change	Contribution to revenue %
Outgoing voice	**40 993**	45 440	(9,8)	(4,0)	59,2
Incoming voice	**6 889**	7 483	(7,9)	(1,9)	10,0
Data	**15 412**	12 708	21,3	28,3	22,3
SMS	**2 042**	2 328	(12,3)	(8,1)	3,0
Devices	**2 905**	3 727	(22,1)	(21,5)	4,2
Other	**969**	1 073	(9,7)	(8,7)	1,3
Total	**69 210**	72 759	(4,9)	0,7	100,0
Hyperinflation	**94**	–	–	–	–
Total reported	**69 304**	72 759	(4.7)	1.2	100.0

These two points are important for the MTN context, as much of evidence from MTN points to a ramp-up or gearing phase towards digital services in Africa, from organisation design, investments, partnerships, acquisitions, product and service design process overhauling, e.g. adoption of agile development etc. For MTN, the relevance and need of digital service innovation is made evident in the following quote by Senior Group Principle of Digital Lifestyle Services (Int15):

> *"…people are moving away from voice...to free messaging...voice continues dropping year on year… data revenue increasing but not fast enough… to underpin the voice drop in revenue so we then forced into looking at new ways of doing business…".*

Similar arguments were made by most interviewed with variations and additional reasons as summarised in Table 6 below. An alternative to this argument is found in the extract below by the MTN CMO and CSSO. The business of MTN needs to change due to the current growth performance of mobile voice service and future outlook on its performance due to possible disruption of the business model, similar to what has happen to SMS. There is clear evidence to indicate that data revenue is increasing but not sufficiently enough to compensate for the declined growth in voice revenues. In

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addition to concerns regarding the core service, the main revenue contributor. The customer demands are also changing as service levels in all sectors of the economy are improving, and even digitizing, examples of such digital services are those from Capitec and FNB mobile banking in South Africa.

> *"..now banks like Capitec and FNB have shot ahead and we being compared to them and we were frozen, you know so customers have other services that they compare us to …other services that they need and we fallen behind."* - (Int14) CMO and CSSO

From the very on-set of the analysis what became clear was that the direction MTN needs to take regarding service design and service levels will be driven by customer demands, seemingly obvious enough. As service levels are improving on average in many sectors of the economy, by the use of technology and process optimisation, customers are sub-consciously comparing their experience they are receiving to that received from MTN, finding MTN coming grossly short. There is a business imperative to remain relevant with customers by improving service levels through service innovation and the use of digital technology, learning from what is being done in other sectors.

Table 6 below summarises the responses from all the interviews with regards to the need of digital service innovation in Africa, in particular for MTN. Some of the responses pointed to the need for growth or to increase revenue, others to customer relevance using digital automation or referred to the decline of the MNO core business due to threat from OTT services. The intent of Table 6 is to demonstrate that within MTN, amongst the senior management the motivation for service innovation is varied but there are common themes that emerge. The operating challenge from these varied views is on strategy execution, indicating that the strategy to achieve the vision of *"leading a bold new digital world for customers"* is not yet appropriately communicated across the organisation. Fundamentally the reason for why MTN or MNOs in Africa need digital service innovation is because the MNOs traditional voice business model is not sustainable under currents trends in the digital service ecosystem.

Table 6: Construct: Why does MTN require digital service innovation?

Int1	***Int2***	***Int3***	***Int4***	***Int5***	***Int6***
Increase revenue,	*Core business declining, new*	*Differentiation, value add*	*Increase Revenue, new*	*Differentiation, customers will*	*Relevance and*

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customer benefit	*ways of assets generating revenue*		*ways of assets generating revenue*	*pay extra for a better service*	*customer demands*
Int7	***Int8***	***Int9***	***Int10***	***Int11***	***Int12***
A means to relevance, could innovate in wrong direction	*Mature mobile telco market, need for incremental revenue to grow, next big wave*	*Segmentation: consumer & enterprise*	*OTT threat to Core business, improve service of core business*	*Generational theory and changes in social behaviour*	*Voice revenue in decline, data just a bearer, need to move to content*
Int13	***Int14***	***Int15***	***Int16***	***Int17***	
Saturation of core services, increased competition, use assets for new revenue	*Behind in service levels, revenue opportunities*	*Saturation, customer behaviour*	*Digital automation to improve the customer experience*	*unlock the ability to expose digital services*	

In the most general terms, a digital business available on the internet is available globally but requires functionality or capability to be enabled specific to each market in order to build and capture value. It is argued that to enable this capability in each of the different markets across the world, certain digital businesses are at a comparative advantage compared to others, depending on their business model and service dimensions. This can be observed by estimating the effort to enable business operations for Facebook compared to Uber and then even to MTN. This point is merely exploratory without getting into the details, to demonstrate or provoke a thought on the characteristics of business operations in a digital ecosystem that leverages web platforms, becoming increasingly less dependent on the physical world.

Given this conceptual understanding of digital service ecosystems as a precursor, Figure 5 below demonstrates MTNs mobile network operations in 22 markets across Africa and the middle-east, suggesting a physical presence in these markets with a billing relationship with 230 million customers across these markets. This could suggest that since MTN has already a presence and capability in these markets that executing new digital business models in these markets should be comparatively easier than digital businesses that are not yet physically present in such markets.

Most of MTNs revenues are from mobile voice and data services as discussed above, but the intention for MTN to diversify their revenue streams using digital service innovations is evident from the following statement by MTN Group president and CEO, Sifiso Dabengwa:

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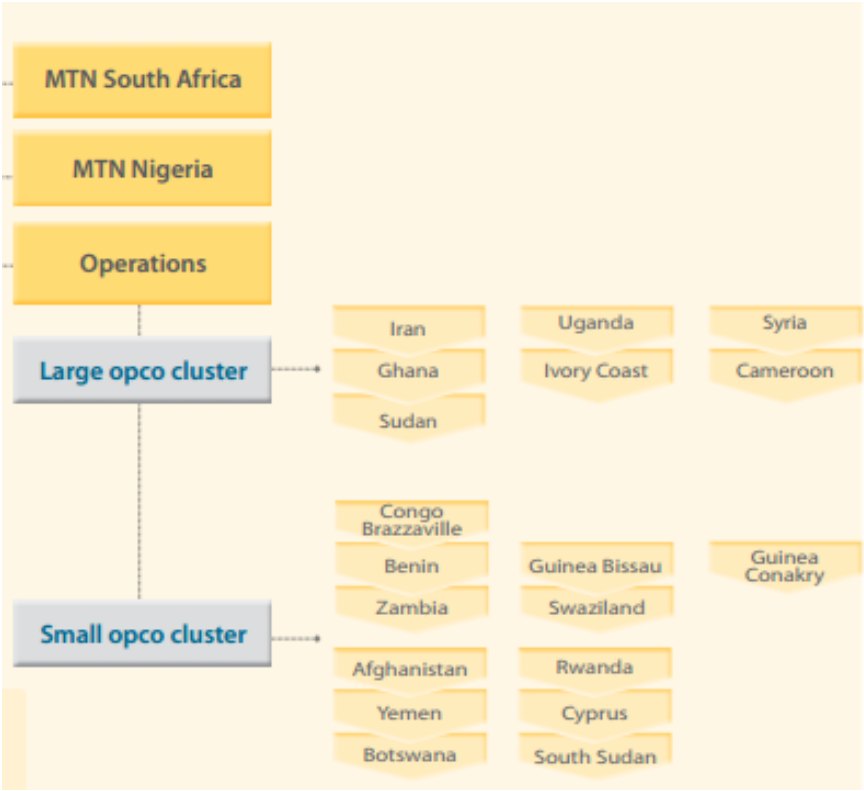
"Through our investment with Rocket Internet we are able to take advantage of our leading brand position and substantial customer base and distribution network to deliver a range of internet services including e-commerce and marketplace offerings, taxi services, travel sites and food delivery…"

While MTN is seeking to diversify their revenue by offering internet enabled digital services to consumers, it is also trying to achieve this by offering ICT services to the enterprise segment. MTN and MNOs in general have had enterprise customers for a long time, but typically only for traditional mobile services at enterprise rates, but now the focus is on new ICT services such as cloud services and connectivity across the MTN African footprint. This is evident from the following statement by MTN Group president and CEO, Sifiso Dabengwa:

"Our enterprise business unit (EBU) is well placed to become the ICT partner of choice to corporate, SME, public sector and financial services customers, given our extensive infrastructure with 22 established operations and 47 data centres across Africa and the Middle East."

Figure 5: MTN Operations in 22 markets across Africa and the middle-east (MTN Group, 2014)



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MTN is a company that has made some gains in digital service innovation in the form of mobile money and music callertunez, but MTN has ambitions to find further growth in the unfolding digital ecosystem, deduced from the latest MTN Integrated report (MTN Group, 2015), where the MTN Group Chairman and ex CEO, Phuthuma Nhleko has made the below statement:

"The Group will remain at the forefront of the unfolding digital world by investing in increasing capacity and skills that are essential to partnering with digital content providers and pioneers."

After 20 years of double digital growth and expansion from a start-up in South African to 22 countries across Africa and the middle-east over this time, the company now faces many new challenges. Some of these challenges are; the maturing mobile market in major MTN operations, more stringent and ambiguous regulatory environments, an ever-evolving dynamic digital ecosystem and a weaker economic environment across many of the emerging oil-dependent economies driven mainly by lower oil prices. The dynamic digital ecosystem is influencing and perpetuating consumers to demand digital services that include high automation with a seamless experience. Given these challenges, for MTN, the path to renewed growth from digital services is understood to be a long term approach as deduced from the below statement from MTN Group Chairman and ex CEO, Phuthuma Nhleko.

"In the longer term, we can expect rising contributions from MTN Mobile Money and the investment with internet incubator Rocket. This partnership is shaping e-commerce and the online culture in the Middle East and Africa."

From this section a very broad context of MTN was understood, covering topics on MTNs current revenue streams and the ambitions of the executive team to diversify service revenues with their internet enabled digital service offers to consumers and ICT cloud service offers to enterprise customers. These investments and new service launches outline the strategy execution of MTN for growth. This outline provides some evidence that the senior management team and MTN board members understand that the traditional mobile voice business is not sustainable and that this also applies to data or internet access in the long term, hence the need for MTN to look at digital services beyond the core. This context of MTN, given their position, market presence and approach to digital service innovation provides the motivation and reason as to why MTN is suitable as a single case study to understand digital service innovation in Africa.

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As a way to conclude the understanding of the MTN context, the commitment by MTN to seize opportunities in the digital economy and to become a leading digital company should be explicitly noted. This is critical to evaluate and understand MTN's execution against their current strategic objectives of digital service innovation. These points further motivate that MTN is suitable for this single case study. The structure of MTN Group has also been changed this year to have a senior Group executive focused on the new digital business while another Group executive is focused on the traditional business which still contributes more than 90% of revenues. The following two extracts are from the MTN Group 2015 interim results and suggests that the Group Consumer division, will use big data analytics to improve segmentation and offers to customers for traditional mobile services. This responsibility also requires that MTN continue to drive smartphone penetration and position the MTN brand as a digital brand.

> *"The Group Consumer function has been established to focus on supporting MTN's traditional voice, data and SMS revenue while also enabling operations to effectively package these offerings to meet our consumer segment needs. Customer analytics are central to understanding and segmenting our offerings. Driving smartphone penetration, positioning MTN as a digital brand and creating synergies across the Group for agile rollout of services are also key priorities."*

The Group Digital function will work closely with Rocket Internet to continue to rollout a variety of e-commerce and lifestyle offerings with 128 operation across 30 markets. This provides context of the scale of the investment of MTN in digital services and their ambition to find growth in this ever evolving space.

> *"MTN is well positioned to tap into the digital space on the African continent and in the Middle East. The Group's Digital function aims to leverage our brand, customer base and distribution network to accelerate growth in e-commerce, financial services, media and entertainment and lifestyle services. Through our investments with Rocket Internet AG we continue to rollout a range of e-commerce and lifestyle offerings with 128 operations across 30 markets."*

With splitting of the functions of MTN Group to focus on digital and separate for voice, SMS and data, as discussed above, the two business units are still part of the same business, especially with the shared service being rolled out, operational efficiencies is a key focus. The question was asked about totally splitting out the digital function and executive as a separate operating company, but the following response was provided:

"Telefonica is a good example they tried splitting out home digital business and I think just over two years after that split they're integrated the digital business into the core business and the learnings on that was having it as a separate unit was not driving the total shareholder value and hence the reintegration and scaling down to some extent to avoid duplication of resources for example then reduce their operational costs on the digital unit "

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- Senior Group Principle: Digital Lifestyle Services (Int15)

Given the above cost saving reasons, the argument was made that this European telco is making progress, and is a likely be a strategy that will work for MTN. This involves acquiring new businesses. These new businesses should not be integrated but rather left to innovation and entrepreneurial, i.e. let the acquired company be for the reason for which it was acquired.

"acquire new businesses in the new industries and let them run autonomously so let them contribute towards the overall revenues and don't covert those acquisitions into a telco type operational model so let them be entrepreneurial …and drive the revenues for the business and also the expertise is much higher within those focused units as opposed to being a broad based skills you have specialists in different segments and then it gives you key market access you can compete with the bigger incumbents within those sectors and ultimately you become a key competitor. "

- Senior Group Principle: Digital Lifestyle Services (Int15)

The understanding of the company structure in addition to understanding MTNs business position, business cycle, market presence with related economic environment and MTN's digital service innovation approach will guide the rest of this chapter. The following sections in this chapter will use this contextual understanding of MTN to evaluate the findings from MTN against each of the research themes that emerged from the literature review.

5.3 Goods vs services

The business of MTN has had a legacy of a two-prong approach; (1) The network team as technical experts would build and roll-out the network for service provision, a key part of the technical enablement operation and at times becoming the growth constraint. (2) The marking and sales team would be responsible to build the distribution network of physical SIM cards, airtime vouchers and mobile phones, together with building the brand awareness, in the early stages of the MNOs business, this was often the constraint and received a lot of attention. This was driven by the reality that if SIM cards and airtime was made available, it would be bought by customers resulting in airtime usage and as a result growth in revenue. This focus and importance on the distribution of physical SIM cards and airtime vouchers over many years had created a prolonged entrenchment of the goods dominant logic within MTN

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and MNOs globally. One of the respondents had the following to say with regards to the mind-set within the organisation and from where this is coming from.

> *"Very internally focused I think they are still, there needs to be a paradigm shift to ensure that we not a telco where in the past we selling sim cards and voice minutes and data bundles whereas now we selling a service and that service is not a traditional telco one"*
>
> - Senior Group Principle of Digital Lifestyle Services (Int15)

MTN is still firm-centric and requires a change of the mental model. With this goods dominant logic found within MTN, it has become the standard for MTN and even other MNOS to drive the smartphone adoption strategy in order to drive bearer data revenue growth. This smartphone push by MNOs is in itself opening up the mobile telecoms space but while keeping every other aspect of their business the same.

> *"We will continue to increase data revenue by encouraging uptake through increased smartphone penetration and new pricing strategies."* (MTN Group, 2015)

What this is also doing at the same time, is driving OTT adoption, especially the likes of Whatsapp who has disrupted MTNs person to person SMS business as prices for SMS remained unnecessarily high without any innovation. With the size of the Whatsapp user base, the same is feared for the mobile voice business. The point here is not that MTN should not be pushing or even preventing smartphone adoption, as customers demand smartphones, connectivity and choice variety of many OTT services. The point here, however, is that a goods dominant logic had prevented MTN from evolving their business and hence contributed to increasing the risk on its own core business. This shift to an alternative logic from a goods dominant logic has started happening across the organisation as alluded to in the following quote:

> *"The core business of MTN is still mobile connectivity. It is still a B2C company primarily […] selling SIM cards is still the core where our revenues come from. But that is changing. The market is saturated in that regard. Our revenues are declining so there is a big drive to find alternative sources of revenue"*
>
> - Senior Manager of ICT Service and Innovation (Int13)

What was also found was that MTN has been innovating around SIM services even today and this could suggest innovating around the core business, which is argued to be a good thing, provided it can capture value within this evolving digital ecosystem.

> *"I am tasked with sim planning anything in the sim card space; my team is responsible for capacity planning and new innovations within that space"*

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- Technical Expert: SIMs, Security, M2M, IoT (Int1)

The need for a shift in mental model or a change in dominant logic of the organisation came through a number times in the interviews, despite no detailed evidence of this been found in any official MTN published documentation. It should however be noted that there are a few internal project documents describing current projects on the go that suggest MTN is orchestrating across the organisation, a change in skill set in the organisation, a change in cultural operating system and a new agile based product and service development process. More evidence that suggests that this shift is happening in the organisation, is what the following respondent shared, regarding innovation and that it could come from process innovation, and not only technology innovation.

> *"Yes and the innovation necessarily, isn't necessarily on a technical level but it's more on a just a process, its a process innovation."*

- Senior Manager: Customer Lifecycle Management (Int5)

5.4 Service innovation at MTN

5.4.1 Content and entertainment services

The MTN portal for mobile content is called MTN Play and the video-on-demand service is MTN FrontRow. The MTN digital strategy for consumers are predominantly focused on media and content, such as music, movies and text based services via SMS and USSD. Customers with limited access to smartphones or data services are a better fit for MTN mobile content but in general, most MTN customers are not accustomed to consuming non-mobile entertainment like video-on-demand. This however holds true even for those early adopters in the South African market, as the MTN brand is not associated with these video-on-demand entertainment services, as there is a brand identity challenge. Customers have associated MTN or telco brands with only telco services for a long time, hence it is not in customers mind to get all "adjacent services" from the same brand. Some brand identity work is required. MTN has made good growth from ringtones, Callertunes, wallpapers, i.e. traditional mobile Value-Added-Services (VAS). MTN has made a lot of money in the 3rd party WASP space, but gave away a lot of the business in the form of revenue share, but now with the Huawei Service Delivery Platform (SDP) is trying to bring that back in as a more

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direct model. Despite the different digital content projects, one respondent was concerned about the rate of change by MTN in moving towards digital content opportunities:

> *"My take was that if we have made that transition from voice to know that data is our core business, how fast are we gonna make that transition that data is only the bearer and content is the king"*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

MTN understands the telecoms business but not the adjacent industries in which it has ambitions to grow into, so there is a skills gap to build strategies to diversify and move into these adjacencies. This will require that MTN hire media people, etc. to move into these industries. MTN needs to make sizable investments into new services and to staff these initiatives appropriately with people that have the right skill. It was found that only half a person was allocated to MTN FrontRow internally, i.e. no dedicated person. These initiatives are being setup for failure as they are not resourced sufficiently. Looking at the Telkom media division example, it had large investments and resources but also failed, so from this it is understood that a middle ground approach is needed to test opportunities. The best approach could be represented as not dipping toes but also not fully diving in, all the factor conditions for a successful service launch need to be in place. What is clear, is that the approach for digital content opportunities, is likely to be partnerships or acquisitions, as one executive respondent argued that MTN cannot built a new business within the existing business. The skill to do this does not exist, it has never been done. The proposal was to make a good acquisition and run it separately as a media company. Another option that emerged from this discussion was to also do strong partnerships, but this requires the right level of investment and resourcing to manage the partnership. Before moving deeper into the discussion of partnerships or acquisitions, by looking at the following statements by one responded regarding content creation, this suggests MTN needs to be directly involved in content creation as it is believed that at content creation is where the comparative advantage is built.

> *"Does MTN need to be that content creator? Absolutely, does MTN have to get into the soap opera game? Absolutely, does MTN need to produce a movie at some stage? Definitely, is MTN gonna come out with a version of Idols, I think if we don't do it, we missing the trick."*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

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MTN has clearly identified that having a content strategy is critical and has been developing this with consultants, as one responded has indicated below. The development of a good strategy is needed as the poor performance of a number of digital content projects at MTN suggests a lack of cohesive strategy, especially in terms of partnerships and service design.

> *"I think there's a lot of consultants that's consulting in the group space that is actually developing a content strategy"*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

One argument made by one of the respondents was that for MTN, selling digital content is not all incremental revenue, as this customer of digital content is likely to spend less on voice and data as a result of their spending on digital content. The below quote argues that MTN is becoming a content reseller, with different models in place but is moving towards standardizing these models to ensure partners have a similar experience across the group.

> *"MTN is just becoming a reseller of content so we not as it would be termed, a principal of that service we an agent and we would have revenue share model on that basis. So there are different models in place and that framework so that we can get standardisation across our operations otherwise you find partners being handled very differently within each opcos."*
>
> - Senior Group Principle: Digital Lifestyle Services (Int15)

Based on the reseller revenue share model that MTN is pursuing, this indicates an understanding of their competence and identification that a specialised skill is required. This sentiment is common across interview respondents, with some suggesting to remain as resellers, while others strongly recommend MTN to be directly involved in content creation and development. Especially with MTN's unique market position and brand position on the African continent. In this suggestion, it is recognised that MTN does not have the skill for content creation, with one respondent making the statement that it is no possible to build a new business within another. A definitive approach for MTN to get into content creation is to acquire the skills and capability but the point was made to ensure the company is run separately with minimum interference. The following quotes indicates that post the acquisition there needs to be continuous learning and evolution of the organisation.

> *"We not good at content so we acquire, we learn and then these people become part of the organisation, that's how an organisation continuously evolves"*

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- Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

One respondent made an interesting point in this partnership debate, does MTN partner or acquire a content provider or content owner. This adds another dimension to this partnership and acquisitions discussion, aligning to the suggestion that MTN is working with external consultants to develop a content strategy, given that this is an unknown and nuanced space for MNOs.

A key debate at MTN about partnerships, especially for digital content services is the impact on EBITDA margins due to different revenue share business models. This is a result of MTN and MNOs shareholders accustomed to 43 to 44 percent EBITDA, therefore capital allocation to projects that bring down this margin struggles to gain traction. The discussion below with this respondent indicates that this natural obsession with margins has prevented the business from exploring innovative business models.

> "*If you go into traditional content businesses the different splits in the revenue share for example leave very little to the telco and as a result that has an impact on the (7:48 inaudible) margin now if you look at MTNs objectives they want to try and maintain an (7:56 inaudible) around forty three to forty four percent and if you are only getting out a net margin of around twenty percent, that has a significant impact on a forty three percent EBITDA so you have voice that is declining that usually contributes a large portion to that forty three percent so if you split the forty three percent voice and data are still the big drivers as the contributes to the forty three percent. Now you've added another slice of revenue but that slice is at twenty percent so, The average starts coming down, you know if you do some modelling around if you getting twenty percent but you getting a high revenue like total revenue of that is high so twenty percent is significant but it has an impact on the EBITDA margin so do we change the shareholders mind-set and say well you know do we continue pushing for a forty three percent EBITDA which then excludes us from being a player into lower EBITDA environments or do we show the value that this twenty percent will bring into to avoid the telco becoming non-relevant, that's the challenge that we need to balance,"*

- Senior Group Principle: Digital Lifestyle Services (Int15)

5.4.2 Mobile Money services

> *"During the period, we grew Mobile Money subscribers by 45,8% to 32,4 million. This performance was underpinned by expanding our distribution base and product range to include international remittances, savings, lending and insurance and retail payments."*
>
> MTN 2015 Interim Results (MTN Group, 2015)

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The dominant MTN definition of the digital business, historically has been ringtones, etc. and Mobile Money. Mobile Money is not doing well is SA, but in Uganda and a number of other MTN operations across the group, it is doing very well. The Groups Mobile Money subscribers is sitting at 32.4 million customers. The head of Mobile Money in South Africa argues that the business model deployed in South Africa is not appropriate and also that there is a lot of competition from the banks, especially with their focus on mobile. FNB has done very well to move digital and mobile with eWallet. The CIO described how simple the service is to use. It works by paying to a mobile number, the recipient gets an SMS with code to withdraw from the ATM. It is these simple services that provide value for customers and firms looking to find digital service opportunities. MTN has committed to drive their Mobile Money services as indicated in the following extract.

> *"The continued rollout of MTN Mobile Money and broader financial services remains a priority as well as developing our digital offering with our partner Rocket Internet AG through the investment in Africa Internet Holdings GmbH (AIH) and Middle East Internet Holdings S.A.R.L (MEIH). "*

In South Africa, MTN first launched the Mobile Money service in partnership with Standard bank, many years later after exiting that partnership, MTN re-launched with a new model. The new Mobile Money by MTN was launched by partnering with the Bank of Athens for their banking license and TYME to build a custom technology platform. The service was offered to all customers across all mobile networks. MTN partnered with retailers for the retail footprint but struggled to make progress with this distribution network. MTN wanted to build a mass banking product that would address the unbanked market and would resolve South Africa's financial inclusion needs. The head of Mobile Money describes that MTN created a bank account but was not confident about going after the mass market with this product, because of the potential low revenue value of these customers and therefore MTN extended it up to higher value customers by adding a VISA banking card to it. This drove up costs without growing the revenues. This was due to no clear segmentation, no clear articulation of positioning, because the high-end customers did not want the same bank account that was meant for the mass market. The problem has been identified as to do with positioning, MTN needs to take one position and own it. As the new head of MTN Mobile Money says:

> *"Absolutely own it. Make it your own and then what you can do, is you can from that base extend into corresponding segments where you see opportunities."*

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The key mobile money respondent went on to describe further, the challenges for MTN Mobile Money. That even if MTN goes after the mass market, they will be going head to head with the best bank for the mass market, Capitec Bank. Capitec Bank has perfected their positioning and customer experience for the mass market segment. MTN does not have thousands of ATM's, nor does it have hundreds of branches that only do banking. This places a constraint on the type of mobile money service MTN should provide in the South African market.

> *"Yes ya so the time platform is a bespoke platform, its ours we built it we own it but we can't really maintain it co we don't have the expertise whereas we do have the expertise to develop on Ericson so there's a lot of upside to bring mobile money onto the Ericsson platform and launch the platform internally and then go out and grow the business."*

An interesting finding from the discussion on the MTN Mobile Money service, was that the Bank of Australia wants to use telco data for customers calling patterns as good predictors of how reliable customers are with loan repayments. The Bank of Australia has recently announced the acquisition of TYME, the technology partner of the MTN Mobile money service. These models of using telco data for providing cash credit to mobile consumers is currently being used in Bulgaria and has proven to be successful.

> *"we've created our own platform or our own banking platform with time, we work with the bank of Athens and through them we direct transact and they do our banking debits and credits and settlement on a daily basis, we do work with visa for card settlement and card transactions and then we work with ycode so that we can access our distribution network, Pick N pay and Boxer or whoever that is."*

- Head of Department: MTN Mobile Money (Int7)

5.4.3 Enterprise Services

MTN is also seeking to diversify their revenue by offering ICT services to the enterprise segment. MTN has had enterprise customers for a long time, but typically only for traditional mobile services at enterprise rates, but then acquired Verizon Business in 2008 to grow this enterprise customer base, offering full Internet Service Provider (ISP) connectivity services. This acquisition evolved into MTN Business which eventually was fully integrated into MTN SA. There were many challenges with the integration but the most recent strategic objective requires MTN business in South Africa to grow their revenues to R20bn by 2020, which is a considerable contribution, when compared to the total Group revenue for 2014 of R146bn. The MTN Business unit continued to go through many changes in 2015 but the CEO of MTN Business at the Strategy Roadshow in September 2015 mentioned that the latest focus for the EBU, is on new ICT services such as cloud services, unified communications, internet of things (IoT),

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managed networks and connectivity across the MTN African footprint. The following extract from the MTN Integrated report provides further understanding and highlights the partnership approach to achieve this aggressive growth plan.

> *"Our enterprise business unit (EBU) continued to work towards its vision of becoming the ICT partner of choice to corporate, SME, public sector and financial services customers. The key focus during the period was aligning the organisational structure and appointing industry leaders in key markets to support this vision. The EBU has established strategic partnerships with Amazon Web Services and Azuri Microsoft to enable the Group to effectively take products and services to the market."* (MTN Group, 2015)

To get a more detailed understanding of the enterprise area, a review of a current project in the MTN EBU, this review will cover work done on an Enterprise Device Management project. Traditionally there has been misalignment between the enterprise business unit teams and consumer teams and the way in which consumer devices were managed end to end. This project has been put into place in EBU to create some sort of structures, governance and frameworks to govern device management. Partnerships has been stressed as part of this project as the way to move forward, working together in order to service MTN's customers, and as stated by the respondent, Senior Product Manager: Device Management, EBU IoT, ICT Services (Int9):

> "*in essence MTN is becoming the ICT partner for these businesses and ICT is not just network or device, it's a combination of all of that, and that's where the OEMs are willing to assist as well in terms of working together with MTN to get the best possible service to the customers"*

The focus on the enterprise business side has been completely different from how the consumer business is run at the moment, as an example, MTN has approached certain OEMs that have specific products that will provide value add for MTN EBU clients in a particular type of engagement, so definitely there's a lot of partnerships to create this symbiotic kind of relationships to give MTN EBU clients the best possible end to end service. An example of a challenge between the EBU and Consumer is, if a EBU client wants a certain feature but MTN has not tested it because on Consumer side it was not needed and not feasible to test, as result this required MTN to build separate product catalogues for EBU so a product catalogue will contain for each sector so for example the security sector, MTN has security companies as clients and they want to buy devices from MTN for their personnel in the field, these customers would prefer to have ruggedized devices, so MTN needs to ensure that this is in their product catalogue.

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MTN has provided SIM cards to enterprise clients for car tracking and telemetry markets for a number years, and it is out of this market and other machine to machine (M2M) markets such as smart-meters, etc. that has provided MTN with the insight and ambition to seize opportunities in the M2M and IoT space. MTN had invested in 2 or 3 different IoT Platforms as a way to provide a management platform to clients to manage connectivity and settings for their devices and solutions. These platforms were also intended to provide management services for the data that was generated from these connected devices and sensors in the field. These platforms were developed and launched by MTN in partnership with technology developers but the proposition or the execution if these never allowed any substantial value to materialise. M2M and the IoT has been spoken about a lot increasingly in main stream media but the actual service take up and revenues not as much, and has been limited to vehicle tracking and very specialised applications. The home automation and monitoring market, MTN is not driving, just providing SIM cards and connectivity. Looking at some of the examples in the IoT, example the Samsung fridge can tell a customer what is in their fridge, and could be seen as a bit of a novelty but another example that could be useful, is the ability to set a DSTV recording remotely. The latest development is that MTN is now driving machine to machine with a ZTE platform, to provide more services and be an enabler for other companies to build on these to provide services to end consumers, so a B2B2C type model.

5.5 Service ecosystem

MTN operates in a complex ecosystem made up of a variety of different type of actors. Each of these actors have varying levels of relationship and interaction complexity. These structures either constrain MTN or assist in resource availability to help improve MTN's position in the ecosystem. The ecosystem in which MTN operates is made up of the following actor categories:

1. Suppliers
2. Communities
3. Customers
4. Business partners
5. Government and Regulators

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6. Shareholders
7. Board of directors
8. Executive leadership team
9. Employees

The relationship between MTN and some of these stakeholders, actors, or partners is complex to describe, as is many types of relationships, but using the below quotes and extracts from the research interviews and the MTN Group Integrated Report, an attempt will be made to define an understanding. To outline an understanding, the first definition will begin with a very topical relationship in the media as at October 2015. This is the relationship between MTN, the government and the regulators in Nigeria, MTN's largest market. On the 26th of October 2015, news broke that Nigerian Communications Commission (NCC) has fined MTN US$5.2bn for not disconnecting 5.1 million un-registered SIM cards before the deadline, this resulted in a 12% fall of the MTN share price on the day (England & Wallis, 2015). This is an extreme example epitomising the political and business complexity in African markets but is characteristic of many of the key markets that MTN is present in across Africa and the Middle-East. The structure of the relationship between MTN and the regulators in these markets are strained and constrain digital service innovation. This is further supported by the following extract:

> *"A difficult regulatory environment and weak macro-economic conditions continue to impact the Group's performance"* (MTN Group, 2015)

Partnerships in this ecosystem is a key part of the MTN strategy as can be seen from the below extracts. The next relationship structure in the ecosystem to define or outline, is MTN business partners and suppliers for digital service innovation.

> *"The link to our strategy, priorities and KPIs ……..Increased partnerships"*
>
> *"Strategic priorities ……M&A and partnerships"* (MTN Group, 2015)

This is in the form of internet or e-commerce partners, and these current relationship structures with MTN creates resource density, i.e. places more capability closer together for re-combinations and as a result service innovation and therefore improves viability for MTN in the ecosystem. The evidence can be found from the extracts and quotes below:

> *"The continued rollout of MTN Mobile Money and broader financial services remains a priority as well as developing our digital offering with our partner Rocket Internet AG*

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> *through the investment in Africa Internet Holdings GmbH (AIH) and Middle East Internet Holdings S.A.R.L (MEIH).”* (MTN Group, 2015)

MTN has prioritised their mobile money and broader financial services but while pursuing digital offerings with their investment in an internet partner. This investment has provided them access to ecommerce online retail businesses in food, clothing and even successful taxi service Easy Taxi, a worthy Uber rival in emerging markets. MTN has recognised the need of digital service innovation for MTN in Africa, and one of the major approaches for MTN is to buy or partner strategically with service innovation. This is contrary to the expectations of some MTN employees interviewed, as for them not enough investment is being made to grow or build digital service innovation from within.

> *“On partnerships there’s various models we already implement and running so one of them is the acquisition model and that’s more the traditional way of doing it, the second one is ensuring that we partner with experts in those industries and that could be either we outsource to them and we have a revenue model that works for us or they offer a hosted solution and we just white label it and go to market and then again there's some commercial model in place. In terms of going forward we see that, that model still being applied and maybe to some extent creating maybe more start up type businesses or being involved in the start-up environment because that will then get to innovation, skills and new markets so we can get into new segments or with new offerings”*

- Senior Group Principle: Digital Lifestyle Services (Int15)

The current MTN executive team have a different view in that the current focus is on outsourcing as much as possible and buying or partnering for innovation, not allowing and discouraging MTN engineers from any form of in house software development or proof of concepts. This is primarily driven by the ability to scale the solution with sufficient relevance to most markets in the MTN Group. The current MTN partnership approach for digital service innovation can be understood by the partnership opportunity with Rocket Internet, described appropriately by MTN Group president and CEO, Sifiso Dabengwa:

> *“…This partnership approach enables us to participate in an already successful business with the appropriate skills. Leveraging our economies of scale enhances the business potential, making the roll-out of products and services quick and efficient.”* (MTN Group, 2014)

The MTN partnerships goes beyond the consumer focus, with partnerships for offers to enterprise customers with well-known names in high-tech, i.e. Amazon and Microsoft for their cloud services. From these partnerships it can be deduced that MTN has identified the opening up of the digital ecosystem in Africa and has made different

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types of investments to partner with a variety of players in the internet and high-tech sectors.

> *"The EBU has established strategic partnerships with Amazon Web Services and Azuri Microsoft to enable the Group to effectively take products and services to the market."* (MTN Group, 2015)

MTN has identified some innovation growth models in the digital ecosystem by partnering with different innovation hubs to identify start-up opportunities. The model used is not a venture capital model and therefore faces a different type of expectation, placing pressure on the staying power and the likelihood of finding a worthy start-up. The intention is to the scan the market for innovation opportunities by start-ups. What was not clear was how MTN would ensure they capture the value considering it was not a venture capital model acquiring equity in the start- up.

> *"So what we do generally is scan the market and also the innovation hubs, we've got relationships in most of the opcos with the innovation hubs to some extent the opcos even you know provide some funding to those innovation hubs as opposed to the start-ups and run competition so in SA,"*

- MTN Senior Group Principle, Digital Lifestyle Services

MTN is involved in the business apps challenge, mlabs and jozi hub as indicated in the quote below. These are in place to explore the innovation opportunities but again what is not clear is how the identified opportunities are converted.

> *"Yes an example in SA would be the MTN business apps challenge, they had awards for those top three start-up companies and in the other area we've got mlabs we've got jozi hub in Johannesburg you know of jozi hub?"*

- MTN Senior Group Principle, Digital Lifestyle Services

MTN has been facing constrained growth over the last two years, like many MNOs globally for a much longer time in more developed markets, placing downward pressures on EBIDTA margins. As a result MTN has ramped up focus on their operation efficiency activities to reduce costs and improve margins. To this end, MTN required to partner with some of their traditional telecom suppliers for managed service agreements across the MTN footprint, gaining scale from pooling resources.

> *"Launched network managed services in key markets of South Africa, Nigeria, Cameroon and Ghana. In total, 11 operations have been outsourced"* (MTN Group, 2015)

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For MTN, this means it assists them to focus on their ambition to be the ICT technology partner of choice for enterprises in Africa and to launch new digital services to consumers. These relationship structures improves efficiencies and accountability, while freeing up internal resources to focus on new core and strategic projects to find new growth areas. The following extracts further provide an outline of these partnership characteristics, objectives and structures:

> *"Implementation of an integrated charging system under a managed services platform, enabling access to skilled resources and end-to-end accountability"* (MTN Group, 2015)

Managing growth for MTN has been a challenge as it grew to 22 operations, much of its operations had been run independently. While MTN had the most valuable brand in Africa, the brand experience and operations were fragmented. To fix this the company has embarked on globalising the MTN by integrating and consolidating its operations, a key objective is the cost saving aspect, especially by consolidating back-office services, described below:

> *"extending the use of managed services in Nigeria, and rolling out our back-office transformation initiative Project Next! in Ghana. We expect the main savings from Project Next! to come through in 2016/17, once implemented in South Africa and Nigeria."*
>
> (MTN Group, 2015)

These business transformations are not unique to the digital ecosystem, rather it is argued, that due to globalisation, driven by the digital age and hyper connectivity and movement of people, ideas and capital, businesses globally have been transforming their operations to find efficiencies. Now to shift this discussion from these partnerships made for efficiency transformations, to bring it back to the growth of MTN and partnership frameworks.

> *"In addition to the Group partner framework, we approved a revenue share framework which sets out the parameters for negotiations with partners."* (MTN Group, 2015)

The above extract suggests a type of partnership framework. These frameworks guide and capture sometimes complex partnership opportunities within the digital ecosystem. Partnership frameworks are expected of a listed company the size of MTN, to set the rules of engagement and business model policy to ensure appropriate value is captured for stakeholders. This framework helps with the revenue share negotiations

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between MTN and digital content or service developers. MTN typically provides the trusted brand and billing relationship with a large customer base to market the digital content or services.

To provide further definition or outline to MTN partners in the digital service ecosystem, a list of names is provided here to provide an appreciation for the ecosystem complexity. The complexity stems from the need to integrate and combine a variety of different skills and digital related assets in a meaningful value-adding way. Some MTN partner or actor examples for different actor categories:

1. Network equipment and IT technology partners:
    - Ericsson
    - Huawei
    - Nokia Networks
    - ZTE
    - IBM
    - Smart Village
2. Content Service partners
    - Discover Digital
    - IMI Mobile
    - Huawei
3. Internet & e-Commerce:
    - Africa Internet Holding Gmbh (AIH)
    - Middle East Internet Holdings S.A.R.L (MEIH)
    - Rocket Internet AG

4. Cloud Partners:
    - Its On
    - Amazon Web Services
    - Azuri Microsoft
5. IoT Partners:
    - ZTE
    - Trinity Wireless
    - Siera Wireless
    - Jasper
6. Big Data and Analytics Partners:
    - Google

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- SAS Institute
- Accenture
- Delloite Analytics
- FlyTxt

5.6 Service platform

MTN as like many MNOs are accustomed to building or deploying platforms to support services and in particular, platforms that have Application Program Interface (API) for partners or clients to consume. This allows for the integration of different capabilities and skills across organisations, offering an increased value for the end consumer. It is well established in systems thinking, that the whole system is greater than the sum of its parts. MTN has had the Smarttrust Delivery Platform in South Africa, and S@T gateway in the rest of the Group, and with this platform MTN was able to manage the files and services on MTN SIM cards. The delivery platform for SIM cards allows partners via APIs to offer remote bank card services by using the security on the SIM card and the platform. A similar architecture exists for other platforms in the MTN network, examples are: the platforms for SMS, USSD, MMS, Billing, and location services. All these platforms have APIs for partners to connect to and offer additional services.

A few years back MTN had partnered with Huawei for their service delivery platform, referred to internally as the Huawei SDP. This platform allowed digital content and service providers to integrate into the MTN network platforms using one easy API instead of the digital content and service partners needing to integrate into different platforms across the network. This API provided predominantly billing and messaging services such that the content and service partner could charge the customer for the rendered services and also communicate to the customer using SMS and USSD via the MTN network. A number of respondents referred to this platform, as it is a well-known platform within MTN that has assisted with the digital services growth, and the key capability cited by respondents was speed to market. Speed to market is understood to be important as it is often that some digital services are characterised as a fad, limiting the ability for firms to capture value, depending on how quick they can respond to the trend to capture this value. In conclusion regarding the Huawei Platform,

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a respondent mentioned that there is a lot of innovation happening across the business related to this platform, in the form of process innovation, architectural innovation, and system innovation, but argued that the Huawei service delivery platform is critical for MTN in moving forward with digital services.

MTN is now trying their own OTT offerings with ItsOn Inc. a digital technology provider to enable MNO led OTT services. MTN will pilot this technology for using cloud based platforms to quickly launch OTTs across the MTN group, e.g. launching MTN digital services to 230 million customer in 22 countries, reducing time to market and complexity. To get the platform deployed, it will still require significant integration work but once it is in, then services can be easily rolled out across the group in the MTN cloud. ItsOn Inc. is an OTT technology partner for MNOs, as the need and opportunity for digital service innovation with MNOs has been recognised. This technology is seen internally to MTN as different from the Huawei SDP. The Huawei SDP is more for traditional content type services and typically used for launching WASP type content services but more unique and MTN branded. ItsOn is aimed at OTT directly competing with voice revenues, i.e. minute bundles, data bundles, etc. with a lot of analytics capability build in, even for data packets. This will enable telecoms grade VoIP services with global roaming. The services will provide richness at the user-interface to ensure a certain level of customer experience, as it will be based on a smartphone app with a seamless customer experience. USSD menus as a self-service, service-distribution and access channel is still very common today for MTN services but customers expect more graphic richness, they expect a more simplified and rich customer experience, usually achievable via a smartphone app. USSD works well on feature phones but as an example is not appropriate for iPhone 6 users, as the phone is able to support a much improved customized customer interaction. MTN has found that most post-paid customers do not find USSD easy to use.

MTN is still found to be agile when compared to banks when responding to competitive activities within their core services, this fact is also recognised by banks wanting to partner and launch services quickly. Banks that are partnering with MTN prefer for the services to be deployed on MTN platforms due to the time it will take to deploy in the banking environment. Despite this comparative agility to banks, not enough is understood about the comparative agility of MNOs vs OTTs, were the largest threat to their core business models exist. MNOs and MTN have traditionally not been good at

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responding to OTT services or diversifying into adjacent industries or working on anything as a “game-changer”. MTN has been good at the commitment to investing in the network and technology platforms that will enhance services to segmented offers and this is reiterated by MTN in the following extract.

> *“We will also continue to create a distinct customer experience through investing in our networks to support data growth and improving value and segmentation offers.”*

The major advantage for MTN in digital services in Africa, is the billing relationship that MTN has with 230 million customers. This is achieved through the billing and charging platform and the functionality on this platform can be exposed to different digital services as these opportunities are found. The platform is able to provide rating in real time with the ability to rate differently for different content, network, device and service types.

Some respondents referred to different platforms on which customers interact with MTN, i.e. across the different social networking sites, Twitter or Facebook and even from the call centre of MTN blog. These are different platforms also called channels for which customers can get their problems acknowledged and resolved. These platforms are increasingly becoming more integrated with each other to provide a single view of customer (SVOC), this is sometimes referred to as the customer relationship management (CRM) platform. This results in the customer’s information across the organisation been available in a single platform, despite the source information existing across different platforms. Part of understanding the trends of customer data platforms in successful digital companies is to understand the capabilities and concepts developed under the big data field of study. A field of study providing insights on how firms can use analytics and data science. The intention is to design digital services derived from insight gained through analytics or big data techniques of customer behaviour data and personnel data.

One respondent argued that the smartphone is a platform that serves as a gateway to the world for the customer, a way for the customer to access a wide variety of services that opens up the world to the customer. The point made was that MTN does not need to own the device, SIM or client but to own the provision of services and this way will remain relevant with customers.

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With the new deployment of MTN mobile money in South Africa, MTN partnered with TYME to build a customised banking platform to deliver the functionality needed by the mobile money product. In the rest of the MTN operations, the Fundamo and Ericsson mobile money platforms was known to be used. It is noted that, insufficient information was gathered on Mobile Money platforms but what is understood that these platforms required integration into a number of environments such as the banking ecosystem, retailer's point of sales and MTN network platforms. The head of mobile money in South Africa has argued for changing the bespoke platform by TYME with the new Ericsson platform with this motivation:

> *"Ericsson unifies a lot of the puzzles pieces that we currently have sitting apart so they come together in one piece."*

A key challenge with the current partners and platforms is that the incentives are not aligned. The key respondent on mobile money has stated that MTN has struggled to get their partners aligned to move the service in the right direction. MTN key mobile money partners in South Africa want to have a product feature focus and to build platforms with a lot of functionality, instead of using the fundamental marketing principles of segmentation, targeting and positioning. It was further argued that the business model needs to be adapted to ensure alignment across partners such that if the service is not performing then all partner take the strain but if the service does very well then all partners benefit.

> *"Shared risk, shared upside"* - Head of Mobile Money (Int7)

The following quote is very long and should have been summarised, but the information available to provide some understanding on service platforms is critical. The complexity in the mobile money service ecosystem presents itself to some extent due to the choice of service platform as discussed below. The move to the Ericsson platform is the preferred approach but will come at high exist clauses for the existing platform.

> *"You can see that TYME sits in the middle and they are our translation layer or our (56:33 inaudible) layer but actually I've just had this realization they provide interoperability between our existing partners instead of providing is interoperability in the market and we do have interoperability so the Pesa account works within the Vodacom environment our account works openly so as a Nedbank account holder you can do a transfer in a mobile money account off internet banking cos I can give you my Bank of Athens account that sits in the back ground so there is true interoperability but actually most of our work has been in bringing together all of these partners instead of having one platform or minimal platform and going out there and building the model in the market space. The likes of Ericsson gives us I think an opportunity to*

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> *look at that differently so Ericsson unifies a lot of the puzzles pieces that we currently have sitting apart so they come together in one piece, it also gives us access to our existing business so I can reward mobile money customers with airtime or data on the basis of how they behave so from a cross selling and retention perspective it brings all of our MTN businesses together and it makes mobile money another one of our core products rather than a separate division and a separate product and everything can work together and we can driver over through that and then we work with valuable partners so ycode can allow us to transact with retailers cos we don't wanna do that we don't wanna go in and build point of sale integration and whatever the case may be, and we work with the bank of Athens because we don't wanna have our own banking licence we can get their expertise and we can work with them and drive value but its minimal partners and what you not doing is you not driving your transactions to anyone, they coming off of you so you control customer and you own customer."*

- Head of Department: MTN Mobile Money (Int7)

To understand service platforms and the relationship to digital service innovation the platforms deployed by MTN enterprise unit is of special interest. These platforms are made of the following: (1) the Machine to Machine platform for managing and controlling connected solutions, typically representing internet of things examples, the platform provider was a local platform developer that is the official reseller of the Sierra wireless software package that enabled the key capability. Vodacom also used the platform from this partner. The key problem that this platform solved is well captured by the Senior Manager MTN ICT development respondent as:

> *"And that's what the customers needed. They needed the billing ability to turn on and off a data session remotely. Because [your modem] maybe sitting somewhere potentially hundreds of kilometres away from you and may be doing something funny, you want the ability to turn it off before you end up with a big bill"*

This IoT platform represented a step forward for MTN towards digital service innovation in the IoT space and while the technology contained the needed functionality to solve the customer need in South Africa as indicated in the below quote, the challenge with this platform was that it was bespoke and not standards based, hence hindering growth across Africa. MTN anticipated that this area will grow much more globally and that it should explore a platform that would not limit its clients due to this bespoke protocol on the original platform but rather should invest in a GSMA standards based platform.

> *"For me that was the first time that we had a full end-to-end telemetry/ IoT solution. We had devices in the field that were capturing data, and we had devices at the back end that gave you remote control over that field device, as well as providing a place for data to collect."*

The advantage of the new platform, is that the protocol between the devices and the platform is standards based, so the customer can go independently and develop their IoT consumer application, while accessing the MTN IoT platform to manage their data

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and control the device. The value propositions included: standards based protocols, real time control and management of devices in the field, and a fully automated self-service platform.

A registered patent by MTN in partnership with Stellenbosch University is the ability to monitor the in-flow and out-flow of a geyser to predict that a geyser is problematic and is likely to burst and cause damage to property within the area. This is of particular interest to insurance companies that pay many claims in damages due to burst geysers. This is an example of a South African IoT application that has some a potential business model that is supported by the MTN IoT platform.

Airtime Credit platform outsources to a partner that is carrying the risk of unpaid debt. The service charge is shared between MTN and the partner. The credit vetting and scoring system uses customer behaviour data about recharges and calling behaviour together with the customer data from the CRM system.

5.7 Business model innovation

Business model innovation is a dense concept to grasp as demonstrated by the following quotes. The words “business model innovation” means different things to different people as contrasted by the quotes of the different respondents below. These quotes not only provide the contrasts but also provide some exploratory understanding on the concept of business model innovation based on the reference to business models under different conditions. These quotes will be provide a contextual understanding of business models and together with the conceptual understanding of service innovation a broadened understanding of business model innovation will emerge.

Technical Expert: Rating, Billing, Charging, Service Provisioning (Int2):
*“Ya so the regulation restriction already means that the **business models** must be different.”* *“Ya even if we develop a app ourselves that provides rich content and just the content that people want, it would be relatively easy for any content provider to emulate a successful **business model** and provide that cheaper than we can, so even in the unlikely event that we develop an app and offer content, somebody else can do something similar and cheaper so we would still not make any money.”*

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Technical Expert: Service Delivery Platform, Service Exposure, APIs (Int3)
*"Ya **business models,** its its determined by marketing and currently marketing is acting almost as a enterprise architecture role for our environment which is a problem but, ya so the **business models** is currently not ideal, its there's no strategy or no vision for where that system should be in three to five years but it's always again based on immediate requirements."* *"Ya so currently we have had a nice **business model** created but that was to almost start or to enable this platform to start making money but now since the guy who have designed it has now left I think we now need to move into a more streamlined approach cos currently we still following all the steps that we make sure that we don't miss anything and ya ya currently that's not ideal cos main thing we are focused like my us and my main idea around digital is of a quick time to market approach and now with this strategy there you doing the opposite you actually making sure that ya you need to do due diligence and everything but ya you need to actually get that down to about two to three weeks to get the guys to."*

Head of Department: MTN Mobile Money (Int7)
*"the one drives the other one into the ground actually right now so the way we structured the operating model drives the **business model** into the ground because we have too many partnerships, high exit clauses, floors in terms of transaction value or monthly fee so we haven't hit the ceilings at any point which is why we pay the minimum fee every month, we haven't reached scale "* *"There's no alignment with any of the partners we've been working with in terms of that so it's we building this because we wanna do this and then everyone comes together and does whatever they can on the basis of whether they're in the mood to do it or not, it almost feels like that versus almost like a shared **business model** where you both going after the same segment and the same market and the incentive is to develop as fast as we possibly can,"*

CIO (Int10)
*"Yes its more the operating model its taxis yes and its drive your own taxis but now there's no central office there's an app and people are selecting themselves so if you look at all the new **business models** they took an existing thing they flipped it around abit and they gave more power to the user I mean ultimately before how did you do it you just have to phone the taxi company and say send one, you didn't know where they were?"* *"Our **business model** what before was spend some capex, put it in the ground, make the calls, we don't share any revenue so I think our acquisition and partnership mind-set and ability to move is probably not fast enough because that's not our traditional **business model**, if you look at global companies I mean I don't know who's doing it now but at one point CISCO was buying like fifty companies a year and integrating them, that's how they got to where they did but the obviously developed that acquisition and integration capability,"* *"the whole thing of cloud and OTT is not to have it local anyway so it actually aligned quite nicely with your rolling stuff out quicker and enabling people whereas our old **business model** was sinking physical thing into the ground so that's why,"*

Senior Group Principle: Digital Lifestyle Services (Int15)
*"certainly we moving in the right direction so some of the things from a structural point of view we now restructuring group and opcos to have more focus on digital, we getting the right skill in place, we ensuring that we make decisive you know moves into different verticals, we making sure that we have the right content to compete at, our **business models** are being structured to ensure that we become part of that ecosystem and value chain and also it at the same time we need to protect our shareholder value"* *"I think we still trying to get the right skills in place, understanding the **business model** is still a challenge and I will speak to market and maybe fourthly would be to transform the mind-sets that you not only dealing with the telco but you dealing with a digital services company or a communications services provide."*

Senior Product Manager: Instant Messaging, Voice, Roaming (Int4)
*"MTN FrontRow is not a bad idea I mean for whatever reason (19:43 inaudible) don't know why, it's just not taking off, doesn't seem to have reached enough people where Netflix for instance has a customer base yes they not in South Africa they grew, it's the same kind of **business model** right but they have a business going, so what stops us? im not seeing why it can't be a viable business unless Netflix has had its share and we have gone past that phase and it doesn't make sense anymore"*

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5.8 Opportunities for MTN in digital services and digital automation

> *"…the Group focused on improving its business structure to facilitate non-voice revenue growth. Dedicated Group Consumer and Group Digital functions have been established to ensure MTN is well positioned to participate in a rapidly evolving industry, effectively meeting our customers' needs through digital, financial and enterprise services."*
>
> MTN 2015 Interim Results (MTN Group, 2015)

From the data that was collected and insight received, especially from the CIO (Int10), digital services is understood in the following basic terms. In two types of digital categories, new digital revenue (from new digital services) and then there is digital from digitizing old business processes, i.e. digitising the way your existing business works, there is a lot of benefit from doing that, if you look at the extreme Uber example. The digitisation of old processes could be quite disruptive on its own. Digitising old processes however thus introduce new business models in way that it takes existing model and *"flips it around a bit"* thus giving more "perceived" power to the user compared to the traditional taxi service, where the customer needs to call the taxi company but then has no idea how far or where the driver is, having to sit there waiting. The CIO (Int10) indicates that digital disruption is mainly about collapsing the value chain or shortening it, for example looking at the old book store and now ebooks on Amazon, the distribution mechanism has changed. From printing, shipping to distribution warehouses, etc. until on shelves at Exclusive Books. Then the customer still needs to go in to the store to buy the book. This entire process takes a long time, but with the Amazon case, just go oline and buy an ebook, still bought a book but the entire model is changed. It is argued that in 20 years of telecoms, MTN has not changed, about every two years the post-paid customer goes in store to get a new phone, *"this means even the core business can still be flipped around a bit."*

> *"We will drive our strategy of becoming the ICT partner of choice and continue to transform our operating model through cost optimisation, operational efficiencies and commercialising our tower infrastructure."*

MTN is weak in process optimisation, and has missed the opportunity to modernise with processes as many companies are doing across sectors in the African market. Looking at Uber and a number of online stores, they spent time on their processes.

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They constantly looking at how they can improve the customer experience by analysing customer behaviour and finding where they can shorten the time for customers. Given MTNs stated ambitions from their Integrated Report, if MTN wants to be the best in digital services, they need the capability to optimise processes using digital technology. This includes looking at the final delivery, understanding the customer experiences if we were delivering a physical item, this requires a hybrid of IT and Marketing skills. The other requirement for which MTN has been extremely poor at, is user experience on a graphical level even on a USSD menu, everything and this is where the traditional digital companies out performs MTN every time. These firms understand that this where the advantage is gained, so to spend time on how customers navigate and how fast, all these top websites are permanently counting clicks and where do customers start and where do they end, where does the customer get lost in the flow, example do they come and get half way and fail and never come back. MTN is very poor on customer analytics to understand the customer journeys across the different service touch points, and it was argued by some respondents that MTN is merely measuring how many bundles customers bought, but not measuring the customer engagements to purchase to conversion ratio. This will provide more insights with regards to service innovation and how to improve the customer experience at the different digital touch points.

The CIO (Int10) further argues that the analysis of the customer behaviour is big data because of the volume and veracity of the data, it's not just putting this data into an oracle database and doing traditional SQL database queries because to understand the customer experience after the launch of new products or when the firm does anything in the market, the firm should be tracking social media because customers are telling the firm about their negative experiences, people say it's great so any change that you do you can measure improvements and look at your social media responses and link that to the firms actions. All this customer interaction on different channels is much higher than the actual purchases, so there is a large volume of data, so it is better to put this data in a big data capable system instead of inserting this all into standard SQL databases. Going forward, most of the analysis MTN is doing, is through big data, it's too much to put into standard tables and then do very standard structured queries, it's not actually that type of data, example the data is customer interactions from different channels and social media.

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The mind set at MTN has been based mainly on their traditional business model, captured loosely as spend some capital, put the network it in the ground, let customers make the calls, and MTN does not share any revenue. What was apparent for some of the respondents, is that they argued that MTN lacks the acquisition and partnership mind-set and the required skill to make it successful. The ability for MTN to move fast enough was also cited as a concern because the digital pace is not the same as the pace of MTN's traditional business model. Looking at global companies, at one point Cisco was buying about fifty companies a year and integrating them, that's how they got to where they did, by developing their acquisition and integration capability. This is not sufficient to just have these capabilities, MTN needs to say that's the strategy and this is what they are going to do because to buy companies and integrate them is risky and a lot of work. A deep rooted change in a very large organisation, even if it is technology or people, the completion of the change in a company is done in two to five years and then it could repeat, it's not even a one year turnaround.

MTN like many firms are using cloud for services that other digital companies are doing better, for example, MTN mailboxes are going into Microsoft Office 365 cloud because someone like Microsoft now can do it better and cheaper. This becomes a cost saving and frees up resources to focus on the core business. MTN is implementing a core IT strategy, stating that anything that will not add direct value to the business or make us a differentiator will be outsourced or push it to the cloud, so that MTN does not need to invest in people and energy for these activities but rather start investing people and energy in what's going to make a difference to their business. Running an email service in not going to make any difference to MTN's competitive edge and there are firms that can do this better. This was argued to be one of MTNs cloud strategy but the CIO (Int10) argued this to better in Europe because the bandwidth is better and in Africa this is still a struggle. In recent times the access to bandwidth has seemed to be a lot better now so a lot more people can start adopting cloud. MTN could use cloud for quick speed to market, as an example, if MTN SA launched a new digital service and then it's just an integration point to Swaziland they can also have the service there. The alternative reality without cloud architecture is that they would have not been able to afford the service there or they would not have had sufficient skills there for a type of service, so MTN can use it for their advantage by the larger operations in Africa driving the cloud services for the smaller operations to make use of. Especially with move to more digital services, these services will not be based in every operation. The proof of concept with ItsOn Inc is to improve the service deployment in the cloud similar to

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that of OTT services, so it is not to have it local anyway and is aligned with deploying services quicker and enabling people.

Another opportunity that is important for growth in the digital ecosystem, is agility and time to market. For strategic objectives that have a high enough priority within the MTN Group, the agility of MTN emerges to try and capture value, however if the priority is not high enough, then MTN struggles to mobilise resources to capture the opportunity. While this insight is not unique to the objectives of this research, agility and time to market is argued to be a relevant strategy to increase service innovation and value co-creation. This is argued to be more of a strategic capability than an actual strategy but the evidence for this ambition is established from the MTN Group Chairman and ex CEO, Phuthuma Nhleko's below statement:

> *"The Group will remain at the forefront of the unfolding digital world by investing in increasing capacity and skills that are essential to partnering with digital content providers and pioneers."*
>
> (MTN Group, 2015)

In conclusion, the challenge or opportunity for MTN in digital services is to understand the real customer problems, or if you look at Uber or Amazon, example how can something like the taxi service be made better. Given the widespread move to digital, especially retail, more and more people buying their goods online, what will happen to shopping malls in 10 years? Digital will minimise people interaction in the physical world and it will increase in the virtual world, but what will that do to social interaction and social development? Will an increased number of people need therapy? An interesting service growing rapidly is Twitch amongst the gaming community and many gamers are spending many hours daily on these platforms. Another example is Periscope, acquired by Twitter, allowing people to broadcast video globally and viewer can post text based questions and comments for the broadcaster to view.

> *"To me the main obstacle is we don't actually assess the problem statement well enough, we quick to say this is the solution but until we truly understand what's the problem only then can we get the real true winning service and things so I think we need to assess more, research more and you know instead of just pushing to implement"*
>
> - Senior Manager CLM

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Even the modern work place has evolved in terms of interpersonal communications. Many communications channels need to be managed, Whatsapp, Telegram, Gmail, Exchange email, and this is a lot of information quickly, shorting the decision cycles, forcing employees to make decisions quicker. This holds true also for customers, with the move to digital, everything is speeding up for the customer, as an example, in the past, prior to pervasive digitization, customers would go to three shops to check prices, on the 3rd shop perhaps the customer would get tired and buy it there, or maybe hold out. Again, with the Uber example, information is speeding up, giving you more choice, putting the power in the hands of the customer. In the digital service opportunities, MTN is currently providing the infrastructure, but digital is not just about the technology, it is about the entire organisation willing to change. A few respondents argued that MTN still have the wrong people in the business and that good talent are those that can spot problems, because you cannot find solutions without understanding the problem. A proposal was made, as an example, to close half the MTN retails stores next year to move these sales to the MTN online store.

Group Principle, Digital Lifestyle Services (Int15)
"Ya so we kind of you know have relationships with these hubs we are not directly a funder to the hubs but we may go in on a promotion or sponsorship if there's an event happening to just understand what is happening in that environment. Being involved on a continuous basis becomes an issue for shareholder value and there's no real return on that an I do say it could be a bit of a risk but then again," *"…our competitors are no more Telco's we have to look at anyone in the digital space whether you could be a start-up, an entrepreneur you could be someone in the media industry and you know just providing services over a digital mechanism or anything that can go into a handset or a tablet or mobile device and that is why we needed to go into service innovation and now the whole focus from group and the opcos is around digital right is looking at adjacent industries how do we move into that?..." -* *"…do we have the skills capabilities. can we have models that are competing with larger incumbents within those industries so let me take an example, if we are moving into video or TV space you know do we have the right content, the delivery mechanisms, the pricing model, value propositions that we can go an compete with the likes of SABC, DSTV, in South Africa and if you move into our other operations same kind of landscape so we have to innovate on the digital side and bring in new services and ensure that we capturing the share of wallet that the customers are spending from the time they get up in the morning till the time they go to bed and if you look at it traditionally it's during the day you are banking, you are watching content or consuming mobile content you are messaging, you may make a few voice calls, you may access the internet and you know even mobile payments so this whole landscape if you look at the lifestyle that's where we need to plug into."*

Senior Product Manager: Digital and Specialised Services (Int 17)
"you need to have a level of insight and courage as a business to invest money into business streams that haven't yet proven themselves and that's maybe one of the challenges that we have is that as big business and as opcos, opcos are quite willing to invest big capex on proven business models but we at the point now where we need to start gambling on business models that haven't proven themselves yet and investing in those in a big way so that we can reap the reward even though we can't quantify that by much."

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The network diagram in Figure 6 below represents the output from the analysis in Atlas ti. These represent the relationships between these constructs as determined by the literature review and the thematic analysis of the data collected. Further findings emerged from the content analysis of the data and the relationship between the different quotes of the interviewees.

Moving from left to right, top to bottom, a relationship discussion will follow. The Revenue of the company is related to the value perceived by the customer. Value is only offered but the customer accepts the service as having value. The customer, content, IoT platforms and devices, products, banks, and partnerships are all part of the ecosystem. The ecosystem represents the digital service innovation ecosystems. Access to service is for customers, and access is part of the digital concept, while services is associated with digital. Data, SMS and Voice is part of the MNOs core services, and these core services are provided by the network, which is a technology that provides the connectivity which in turn provides the access to the service for the customer. The network, SIM card and device together will cause or is needed for connectivity. The SIM, device and Systems are all technologies. The system is a platform, while innovation is part of technology, system, platform, ecosystem and services.

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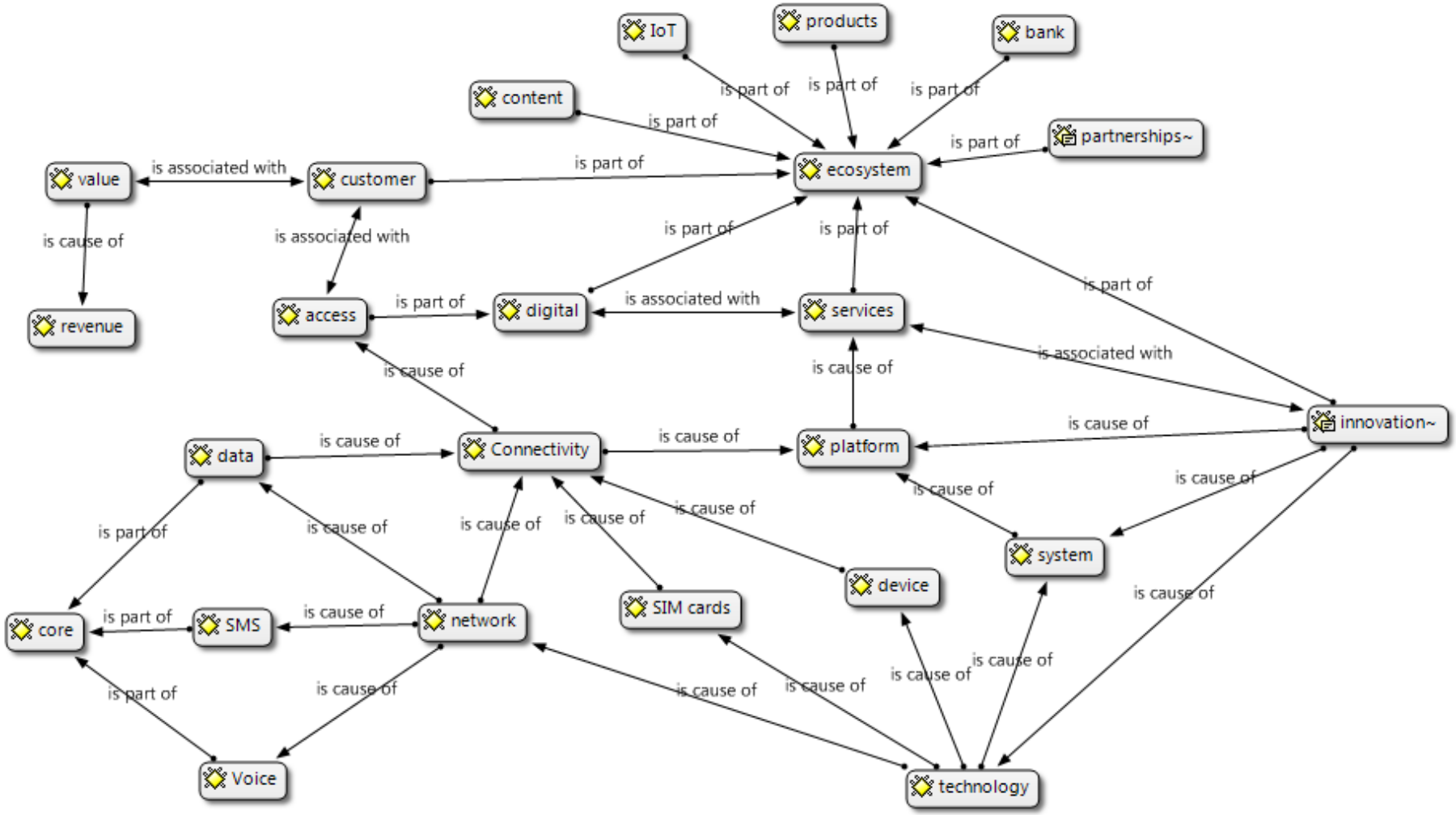
Figure 6: Network diagram representing the relationship between the top 25 codes from data analysis on the 17 interviews in Atlas ti.



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6 Discussion on findings

6.1 Introduction

To answer the main research question, this chapter (Chapter 6) will critically review the findings that was presented in Chapter 5 against the literature review presented in Chapter 2. The case write up naturally approached an impractical length, with 17 in-depth semi structured interviews, and as MTN is a listed company with a large amount of public information on the company released in their annual integrated report, or from media reports and reports by stock analysts. As this research used an abductive approach, moving back and forth between the literature review in Chapter 2 and the findings in Chapter 5 and 6, a more concise case report was ensured. This was achieved through a process of continuous back and forth review, analysis with rewriting to ensure that the focus of this case study is not lost. The data used for the analysis was predominantly from 2015 as a way to understand current phenomena, while improving the understanding on digital service innovation opportunities in Africa.

The structure of this chapter was set-out by the secondary research questions with the main exploratory Research Question 1 binding all these together. The main RQ1 and the secondary RQs are listed below to provide a snapshot of the central layout of this chapter.

RQ 1: How does digital service innovation take place in Africa?
• RQ 1a: to what extent is digital service innovation required by MNOs in Africa? • RQ 1b: what is the constraint for the execution of MNOs renewed growth strategy in Africa? • RQ 1c: what are the strategies for MNOs in Africa to increase service innovation and value co-creation? • RQ 1d: what is needed for business model innovation to capture value from the trends in the digital service ecosystem?

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6.2 RQ 1: How does digital service innovation take place in Africa?

The intention of RQ 1 was to improve the current limited understanding of how does digital innovation take place in Africa. RQ 1 is the main research question representing the central objective of this research case study, intentionally structured as open-ended to enable an exploratory study. A suitable method for a research area covering the fields of IT, Marketing, Strategy and behavioural economics. It is common for research studies to approach a problem in discipline silos and while there is enormous value in doing such, the problem of interest for this research proved to require a multi-disciplinary approach. This emerged as a result of the literature review in Chapter 2, due to the dynamic inter-play of converging elements from the complexity of technology, managerial mental-models, social behaviour and business model innovation.

With the main research question structured as open-ended for a case study, there was a need to guide the focus of this study, therefore secondary research questions were defined that related to key themes that emerged from the literature review in Chapter 2.

6.2.1 RQ 1a: Is digital service innovation required by MNOs in Africa?

RQ 1a aimed to seek empirical evidence to provide confirmation that the MNO sector and MTN in particular requires digital service innovation. This confirmation was needed to indicate that MTN is suitably motivated and incentivised to exhibit strategy development and execution in digital service innovation. In order to appropriately proceed with answering the main research question (RQ 1), the answer to this secondary research question (RQ 1a) is needed to indicate that MTN does indeed require digital service innovation. This positive answer provides the necessary condition such that, exploring the case of MTN would achieve the main research objective, i.e. of improving the understanding of digital service innovation in Africa. It should be noted that the answer to RQ 1a alone, is not sufficient to achieve the main research objective.

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Due to the fact that increasingly mobile customers prefer to use services like Whatsapp instead of SMS, suggests that this trend is a direct threat to MNOs SMS revenues and a sufficient indicator that MNOs need to understand digital services like Whatsapp. With regards to this argument, for MTN, the evidence and need of digital service innovation is made evident in the following quote by Senior Group Principle of Digital Lifestyle Services (Int15):

> *"…people are moving away from voice...to free messaging...voice continues dropping year on year… data revenue increasing but not fast enough… to underpin the voice drop in revenue so we then forced into looking at new ways of doing business…".*

The free messaging services referred to by the above respondent (Int15) is evidence of ICT convergence and its impact on MNOs. This is in line with the impact that was proposed from the literature review (Borés, Saurina, & Torres, 2003), i.e. the offering of services across different sectors. This means that there is an increase in choice for customer's hence competitive pressures. In addition, the fact that these services start as cheap or free substitutes of low quality, assists with rapid uptake, and often the customer experience and value begins to exceed the incumbent service within a short time period. The dynamic, increasing appearance of these substitutes in the digital ecosystem, driven by digital service innovation provides for an incentive to incumbents to closely observe the adoption of these services. This is due to the negative impact on revenues. This provides empirical evidence for what the literature describes as digital disruption (Kenney, Rouvinen, & Zysman, 2015).

The digital disruption trend, provides a clear incentive for digitally contested businesses (like MTN) to increase its understandings on digital service innovation, and to codify these understandings. What was not clear from the data collected, was the magnitude of the incentive by MTN, as expected from this exploratory qualitative study, to develop growth strategies with digital service innovation. It was speculated that this magnitude would correlate with the extent of disruption and could be confirmed by a different quantitative study looking at historical accounts of a representative sample on disruption. This speculation was sufficient to contextualise MTN's incentives in digital service innovation using qualitative data on the case subject. What began emerging very early in this research was that there was sufficient tangible and intangible artefacts from the case subject to conclude that MTN was indeed highly incentivised towards digital service innovation due to the fact that the performance of the business largely depends on it. Much of the evidence presented and discussed across the remaining

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research questions will further illustrate the need of digital service innovation by MTN, and hence MNOs in Africa.

To conclude this discussion on the findings for RQ 1a, an analysis of key insights was done on a critical dimension of RQ 1a. The dimension is, the need for digital transformation of MTN legacy processes, which was used as a proxy for the requirement of digital service innovation at MTN. The fact that the data collected suggested that the customer demands are changing as service levels in all sectors of the economy are improving, and even digitizing, examples of such digital services are those from Capitec and FNB mobile banking in South Africa, as suggested by respondent Int14 below. The MTN post-paid customer segment is overwhelmingly negative due to poor customer experience due to broken processes with the post-paid base of MTN SA declining through 2015. This was in support of the literature that argued that digital artefacts contribute to the transformation of legacy business for comparative advantage (Kenney, Rouvinen, & Zysman, 2015) and that MTN or MNOs in Africa can resist commoditization (Tusa, Singh, & Chan, 2015).

> *"..now banks like Capitec and FNB have shot ahead and we being compared to them and we were frozen, you know so customers have other services that they compare us to …other services that they need and we fallen behind."* - (Int14) CMO and CSSO

6.2.2 RQ 1b: What is the constraint for the execution of MNOs renewed growth strategy in Africa?

The objective of RQ 1b was to seek empirical evidence that would highlight the constraint for MNOs renewed growth strategy. This secondary research question (RQ 1b) was introduced to identify any "problems" that MNOs are facing with regards to digital service innovation. This problem identification step is argued as critical in common problem solving techniques. Problem identification is argued to be the first step to answer the main research problem (RQ 1). From the findings, using the theory of constraints, it was discovered that should the constraint be removed, then residual constraints still come in to play repetitively as one constraint is removed. In practical terms, the constraint cannot always be removed. In the case of MTN, the constraint for the renewed growth strategy was found to be the dominant logic amongst middle management. In fact, from a visit to Microsoft's head office in Seattle, on the topic of digital innovation, this middle management was referred to as the "frozen middle" and this indicates a common managerial phenomena. This phenomena occurs when large

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organisations attempt to change strategic direction. The evidence of this within MTN was pointed out by a number of respondents, with an interesting quote below from one of the respondents. This describes the mind-set within the organisation and the origin from where this is coming from.

> *"Very internally focused I think they are still, there needs to be a paradigm shift to ensure that we not a telco where in the past we selling sim cards and voice minutes and data bundles whereas now we selling a service and that service is not a traditional telco one"*
>
> - Senior Group Principle of Digital Lifestyle Services (Int15)

The findings suggested that middle management was not able to align to the new strategy objectives due to managers holding on to old principles. What this also indicates is that their capability to do so was disabled by their dominant mental models. This means that this was in direct correlation with what the literature had suggested in chapter 2 with regards to product-centric firms (Mele, Colurcio, & Russo-Spena, 2014). While respondents have explicitly referred to the mental models of managers at MTN, the GDL was confirmed using triangulation of additional qualitative data that was collected to indicate obvious symptoms of a goods-dominant logic (GDL). With this analysis, it was found that MTN is weak in process optimisation, and has missed the opportunity to modernise the core business with digital processes. Many customers are increasingly expecting improved customer experiences due to the fact that many companies are undertaking digital transformations of their processes and this is across sectors in many African market. In the interviews, many respondents took up the opportunity to informally evaluate the Uber taxi service as part of the discussion and even online retail stores. What emerged from many of these respondents, was that that these digitally enabled business spent time on their processes. This indicates that they constantly looking at how they can improve the customer experience by analysing customer behaviour and finding where they can shorten the time for customers. What this means is that the evaluation of the above innovative digital services from the different respondent managers aligned to a number of articles reviewed as part of the literature. The word selection and even the focused dimensions by respondents were not necessarily the same as the literature but was sufficient to argue as meaning the same. The key theme that emerged from the data analysed, correlated with the themes as argued across the literature, indicating that service innovation and propositions should be built based on the perspectives of the customers' value creation, translating to the service that the customer experiences (Skålén, Gummerus, Koskull, & Magnusson, 2015).

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With the goods-dominant logic found within MTN, it has become the standard naturally for MTN and arguably even other MNOs to drive the smartphone adoption strategy in order to drive bearer data revenue growth, typical for MNOs according to literature review (Ford & Noury, 2010; Pon, Seppälä, & Kenney, 2015). This strategy is ensuring data revenue growth in the medium term, but this smartphone push by MNOs is in itself opening up the mobile telecoms space, while keeping every other aspect of their business the same. This lack of SDL prevents MTN from truly understanding the problem statement as suggested by the following quote:

> *"To me the main obstacle is we don't actually assess the problem statement well enough, we quick to say this is the solution but until we truly understand what's the problem only then can we get the real true winning service and things so I think we need to assess more, research more and you know instead of just pushing to implement"*
>
> - Senior Manager CLM

The smartphone push strategy itself is not a constraint to the renewed growth strategy of digital services, however if the GDL is dominant enough in the organisation such that the smartphone growth strategy for data growth occupies the majority of managerial capacity, the uptake of digital services by MTN consumers could provide a false sense of satisfaction to MTN managers. This false sense originates from the key performance indicators setup using a GDL and because smartphone sales ae going up and data usage is going up then this should be sufficient. From the literature review it was understood that a SDL will provide a more holistic review of the performance (Purvis & Purvis, 2012; Mele, Colurcio, & Russo-Spena, 2014; Skålén, Gummerus, Koskull, & Magnusson, 2015) .This false sense suggests that MTN is adequately part of capturing value in the digital ecosystem, therefore neglecting further opportunities. The fact that these smartphone customers can access these 3rd party OTT digital services with free public wifi or fixed broadband as substitutes to MTN data services is evidence that this is a false satisfaction with short to medium term gains only. The evidence for the focus on smartphone adoption is taken from the following extract in the integrated report.

> *"We will continue to increase data revenue by encouraging uptake through increased smartphone penetration and new pricing strategies."* (MTN Group, 2015)

The analysis further suggested that a shift to an alternative logic from a goods dominant logic (GDL) has started happening across the MTN organisation as alluded to in the following quote:

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> *"The core business of MTN is still mobile connectivity. It is still a B2C company primarily […] selling SIM cards is still the core where our revenues come from. But that is changing. The market is saturated in that regard. Our revenues are declining so there is a big drive to find alternative sources of revenue"*
>
> - Senior Manager of ICT Service and Innovation (Int13)

More evidence below suggests that this shift is happening in the organisation, by the awareness of the following respondent regarding innovation. What this means is that value could be created and captured from process innovation, and not only technology innovation, which aligns to the literature reviewed on service innovation (Lusch & Nambisan, 2015).

> *"Yes and the innovation necessarily, isn't necessarily on a technical level but it's more on a just a process, its a process innovation."*
>
> - Senior Manager: Customer Lifecycle Management (Int5)

What this means is that if MTN sufficiently transitions to a service-dominant logic then this constraint will be removed and the constraint will move to the next constraint. The next constraint is argued to be MTN's organisational design, structure and development processes such that it will detract from the opportunities to capture value in digital services. The main article from the literature review on service innovation (Lusch & Nambisan, 2015) did not explicitly outline organisational design or structure as a key element in service innovation. It is argued however that the elements related to the structural integrity and structural flexibility of the service ecosystem (Lusch & Nambisan, 2015) has linkages to organisational design and internal project development processes.

As covered in Chapter 5, the evidence suggests that the structure of MTN Group has been changed this year (2015) to have a senior Group executive focused on the new digital business while another Group executive is focused on the traditional business which still contributes more than 90% of revenues. The Group Consumer division, will use big data analytics to improve segmentation and offers to customers for traditional mobile services. The Group Digital function will work closely with Rocket Internet to continue to rollout a variety of e-commerce and lifestyle offerings with 128 operation across 30 markets. This provides context of the scale of the investment of MTN in digital services and their ambition to find growth in this ever evolving space. This

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organisational orientation towards digital is sufficient evidence to shift the exploratory research focus to the next most likely constraint, due to the fact that the new structure and ramp up of the digital team, it is unlikely to be considered a constraint.

A common digital opportunity for MNOs is digital content and entertainment services. MTN has had a number of different digital content projects, but a possible constraint that was argued by one respondent was the rate of change by MTN in moving towards digital content opportunities:

> *"My take was that if we have made that transition from voice to know that data is our core business, how fast are we gonna make that transition that data is only the bearer and content is the king"*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

The argument made was that MTN has depended and focused on Voice revenues for a very long time, now while the ecosystem is filled with examples of a number of successful digital content ventures with many new launches every few months, MTN has not moved quick enough strategically. Indicating a lack of agility on the part of MTN. The pace at which MTN is moving towards digital content opportunities did not come up with other respondents but MTN moving into the digital content space was discussed by many of the respondents. The pace or strategic agility of MTN in moving toward digital content opportunities was not explicitly found in the literature review prior to starting the data collection. Using the abductive method, in an attempt to understand the relevance of these statement, going back to reviewing the literature, this finding was examined by the lens of the broadened understanding of service innovation (Lusch & Nambisan, 2015). The fact that there were insufficient respondents making this angle on the agility of MTN and digital content, it would have been a stretch in this discussion to make any substantive conclusions. What was a common finding across respondents relates to the below quote indicating that MTN is becoming a content reseller, with different models in place but is moving towards standardizing these models to ensure partners have a similar experience across the group. These findings were some of the findings in the research that correlated to the main article in the literature review in a very direct manner, providing explicit empirical evidence for the value of such a comprehensive conceptual understanding on service innovation (Lusch & Nambisan, 2015).

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"MTN is just becoming a reseller of content so we not as it would be termed, a principal of that service we an agent and we would have revenue share model on that basis. So there are different models in place and that framework so that we can get standardisation across our operations otherwise you find partners being handled very differently within each opcos."

At this stage of the constraint analysis, it became difficult to argue from empirical evidence what is the next most likely constraint, once MTN has remove the previous constraint. What this means is that the following constraints is not necessarily sequentially impacting but in large organisations a number of constraints may be impacting growth in different parts of the business. The next constraint that is looked at, has been identified as the positioning of the MTN mobile money service, MTN needs to take one position and own it. As the new head of MTN Mobile Money says:

> *"Absolutely own it. Make it your own and then what you can do, is you can from that base extend into corresponding segments where you see opportunities."*

Product positioning was not covered in the literature review and despite using an abductive approach to the findings, the researcher did not evaluate against marketing journals with service positioning theory in the context of service innovation. The key constraint with MTN mobile money is argued to be more related to the partnerships that MTN has setup with respect to the mobile money service in South Africa. With the new deployment of MTN mobile money in South Africa, MTN partnered with TYME to build a customised banking platform to deliver the functionality needed by the mobile money product. The head of mobile money in South Africa has argued for changing the bespoke platform by TYME with the new Ericsson platform with this motivation:

> *"Ericsson unifies a lot of the puzzles pieces that we currently have sitting apart so they come together in one piece."*

These findings relates to the service platform as a constraint to the growth in the mobile money service in South Africa. From the literature, it is well established that the service platform is a key element of the service innovation process, part of the broadened understanding and is a likely constraint to the growth in mobile money services.

The second last constraint that will be discussed as part of RQ 1b is the constraint related to the conceptual understanding of business model innovation by MTN managers. While many respondents had the idea of partnerships part of their

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discussion about business model innovation, some respondents expected that MTN launch digital service on their own. With these discussions they anticipated problems only because of a GDL, i.e. without considering business model innovation in the context of SDL. SDL was found to be critical to business model innovation in the literature review (Pisano, Pironti, & Rieple, 2015) and with trade and regulatory liberalisation providing marketing choice, it allows the understanding to go conceptually beyond the business model for value creation (Keen & Williams, 2013). The data and the literature alignment was consistently evident across the findings from the different respondent. The evidence for this is found in the following quote:

> *"Ya even if we develop a app ourselves that provides rich content and just the content that people want, it would be relatively easy for any content provider to emulate a successful business model and provide that cheaper than we can, so even in the unlikely event that we develop an app and offer content, somebody else can do something similar and cheaper so we would still not make any money."*

The liberalisation concept (Keen & Williams, 2013) was also used in a non-literal way to explore the dynamic with MTN across different departments, using the abductive method based on the following quote. It was evident that the technology and marketing teams need to liberalise information and responsibility of digital service innovation and value creation to more areas within the organisation of MTN.

> *"Ya business models, its its determined by marketing and currently marketing is acting almost as a enterprise architecture role for our environment which is a problem but, ya so the business models is currently not ideal, its there's no strategy or no vision for where that system should be in three to five years but it's always again based on immediate requirements."*

A final constraint that will be covered as part of RQ 1b is the relationship and processes with the mobile telecoms regulators in the major markets in which MTN operates. The structure of the relationship between MTN and the regulators in these markets are strained and constrain digital service innovation. This is further supported by the following quote and extract:

> *"Ya so the regulation restriction already means that the business models must be different."*

> *"A difficult regulatory environment and weak macro-economic conditions continue to impact the Group's performance"* (MTN Group, 2015)

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The understanding of stakeholder theory in the context of each of the constructs that is part of the service ecosystem understanding is insightful towards the objective of this research (Lusch & Nambisan, 2015). The evidence, relates in particular to the above quotes and extract but also what is currently in the media with regards to $5.2 billion fine given to MTN by the Nigerian Communications Commission.

6.2.3 RQ 1c: What are the strategies for MNOs in Africa to increase service innovation and value co-creation?

The objective of RQ 1c was to seek empirical evidence that would examine the strategies of MTN to increase service innovation and value co-creation. This secondary research question (RQ 1c) was introduced to identify these strategies and to discuss these against the strategic constructs in the literature review. Partnerships and resource integration was found to be a key strategy for MTN to expand in to the digital ecosystem. Looking at the following extract from the MTN integrated report, MTN has invested in a stake of Rocket Internet, what this means is that one approach for partnerships is to acquire a stake in that company:

MTN Group president and CEO, Sifiso Dabengwa:

> *"Through our investment with Rocket Internet we are able to take advantage of our leading brand position and substantial customer base and distribution network to deliver a range of internet services including e-commerce and marketplace offerings, taxi services, travel sites and food delivery…"*

The service ecosystem presents an ecology of sorts, and represents the relationships between the different stakeholders in the ecosystem (Lusch & Nambisan, 2015). The investment in Rocket Internet by MTN is driven by the growth opportunity in internet services, including e-commerce and marketplace offerings, taxi services, travel sites and food delivery. As it is not likely for MTN to build online retails stores, Easy Taxi service, and others from within MTN, it is for this reason that partnerships and collaboration is a strategy to achieve service innovation. This corresponds to a consistent view that emerged from the literature review on service-dominant logic and service innovation (Lusch & Nambisan, 2015; Bolton, et al., 2004; Skålén, Gummerus, Koskull, & Magnusson, 2015). This means that the process of service innovation is a collaboration between different actors or teams that connected in some way. This construct is central to the understanding of value co-creation or co-innovation.

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The next strategy to look at is the growth from offering new ICT services such as cloud services and connectivity across the MTN African footprint. The support for this type of strategy comes from understanding the comparative advantage that MTN has from the following statement by MTN Group president and CEO, Sifiso Dabengwa:

"Our enterprise business unit (EBU) is well placed to become the ICT partner of choice to corporate, SME, public sector and financial services customers, given our extensive infrastructure with 22 established operations and 47 data centres across Africa and the Middle East."

Another strategy that is important for growth in the digital ecosystem, is agility and time to market. Time to market is not an absolute as we can learn from examples such as mySpace and Mxit but is a contributor to successful digital services, usually dependent on the size of the user base. For strategic objectives that have a high enough priority within the MTN Group, the agility of MTN emerges to try and capture value, however if the priority is not high enough, then MTN struggles to mobilise resources to capture the opportunity. While this insight is not unique to the objectives of this research, agility and time to market is argued to be a relevant strategy to increase service innovation and value co-creation. This is argued to be more of a strategic capability than an actual strategy but the evidence for this ambition is established from the MTN Group Chairman and ex CEO, Phuthuma Nhleko's below statement:

> *"The Group will remain at the forefront of the unfolding digital world by investing in increasing capacity and skills that are essential to partnering with digital content providers and pioneers."*
>
> (MTN Group, 2015)

Before moving deeper into the discussion of partnerships or acquisitions, by looking at the following statements by one responded regarding content creation, this suggests MTN needs to be directly involved in content creation as it is believed that at content creation is where the comparative advantage is built.

> *"Does MTN need to be that content creator? Absolutely, does MTN have to get into the soap opera game? Absolutely, does MTN need to produce a movie at some stage? Definitely, is MTN gonna come out with a version of Idols, I think if we don't do it, we missing the trick."*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

MTN has clearly identified that having a content strategy is critical and has been developing this with consultants, as one responded has indicated below. The

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development of a good strategy is needed as the poor performance of a number of digital content projects at MTN suggests a lack of cohesive strategy, especially in terms of partnerships and service design.

> *"I think there's a lot of consultants that's consulting in the group space that is actually developing a content strategy"*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

The following quotes indicates that post the acquisition there needs to be continuous learning and evolution of the organisation.

> *"We not good at content so we acquire, we learn and then these people become part of the organisation, that's how an organisation continuously evolves"*
>
> - Senior Product Manager & Commercial Lead: Fibre to the Home (Int12)

Partnerships has been stressed as part of this project as the way to move forward, working together in order to service MTN's customers, and as stated by the respondent, Senior Product Manager: Device Management, EBU IoT, ICT Services (Int9):

> "*in essence MTN is becoming the ICT partner for these businesses and ICT is not just network or device, it's a combination of all of that, and that's where the OEMs are willing to assist as well in terms of working together with MTN to get the best possible service to the customers"*

Partnerships in this ecosystem is a key part of the MTN strategy as can be seen from the below extracts. The next relationship structure in the ecosystem to define or outline, is MTN business partners and suppliers for digital service innovation.

> *"The link to our strategy, priorities and KPIs ……..Increased partnerships"*
>
> *"Strategic priorities ……M&A and partnerships"* (MTN Group, 2015)

MTN has been good at the commitment to investing in the network and technology platforms that will enhance services to segmented offers and this is reiterated by MTN in the following extract.

> *"We will also continue to create a distinct customer experience through investing in our networks to support data growth and improving value and segmentation offers."*

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From these partnerships it can be deduced that MTN has identified the opening up of the digital ecosystem in Africa and has made different types of investments to partner with a variety of players in the internet and high-tech sectors.

> *"The EBU has established strategic partnerships with Amazon Web Services and Azuri Microsoft to enable the Group to effectively take products and services to the market."*

(MTN Group, 2015)

To this end, MTN required to partner with some of their traditional telecom suppliers for managed service agreements across the MTN footprint, gaining scale from pooling resources.

> *"Launched network managed services in key markets of South Africa, Nigeria, Cameroon and Ghana. In total, 11 operations have been outsourced"* (MTN Group, 2015)

MTN is certainly moving in the right direction with regards to service innovation and value co-creation. Strategically, from a structural point of view MTN is now restructuring the Group and Opcos to have more focus on digital, getting the right skill in place, ensuring decisive moves into different verticals. MTN is making sure that their business models are being structured to ensure that they become part of that ecosystem and value chain and also at the same time, protect shareholder value.

6.2.4 RQ 1d: How business model innovation captures value from the trends in the digital service ecosystem?

The objective of RQ 1d is to explain how business model innovation captures value from the trends in digital service ecosystem using empirical evidence. To unpack the concept of business model innovation, the findings was built on the point that MTN requires digital service innovation. Given this fact, an understanding of the possible constraints together with the strategies to achieve service innovation, the business model innovation concept does not exist in isolation. In fact, it is found that the insights from the previous question provide substantive understanding of innovative business models in digital services. From the various discussions with interviewees, an exploratory approach was undertaken to understand the concept of business model

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innovation. The words “business model innovation” was found to mean different things to different people at MTN. Due to this fact, the evidence suggested that strategic alignment with regards to digital service innovation across the organisation was compromised due to the plurality in meaning of business models. Based on the reference to business models under different conditions by the interviewees and using abductive logic with (Pisano, Pironti, & Rieple, 2015) it was established that no new conclusions can be made conclusively until further analysis of data points that correlate. These quotes, however did provide a contextual understanding of business models and together with the conceptual understanding of service innovation (Lusch & Nambisan, 2015) a broadened understanding of business model innovation emerged.

MTN has to answer the question regarding priority, should they focus on the business model that is well established and is largely in MTN’s control but declining or does MTN apply the same focus to new opportunities with unproven business models that doesn’t exist yet or business model that hasn’t really been defined yet. It is argued that this is the area that MTN should be focusing. This is especially due to the fact that in Africa on average, a typical internet user will be accessing the internet on their mobile phone as opposed to on PC, presenting numerous opportunities in the mobile space.

6.3 Conclusion

Digital disruption and disintermediation of the MNO core business are key incentives for MTN and hence MNOs in Africa to require strategies in digital service innovation. The pervasiveness of digital transformation and automation in the global economy is improving customer experiences across sectors which is perpetuating customers to demand digital transformations from laggard firms, like MNO, MTN. The constraint of MTN to execute digital growth strategies in Africa was found to be a lack of SDL amongst MTN managers. A shift to an alternative logic from a goods dominant logic (GDL) has started happening across the MTN organisation. Value could be created and captured from process innovation, and not only technology innovation, which aligns to the literature reviewed on service innovation (Lusch & Nambisan, 2015).

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From the literature, it was established that the service platform is a key element of the service innovation process, part of the broadened understanding and is a likely constraint to the growth in mobile money services in South Africa. This is due to platform partnerships that did not consider SDL and the broadened understanding of service innovation (Lusch & Nambisan, 2015). A major likely constraint, the relationship and processes with the mobile telecoms regulators in the major markets in which MTN operates. The structure of the relationship between MTN and the regulators in these markets are strained and constrain digital service innovation. Further to the above findings, the understanding of business stakeholder theory in the context of each of the constructs part of the service ecosystem understanding is insightful towards the objective of this research (Lusch & Nambisan, 2015). The evidence supports this but also what is currently in the media with regards to $5.2 billion fine given to MTN by the Nigerian Communications Commission.

The words “business model innovation” was found to mean different things to different people at MTN. Due to this fact, the evidence suggested that strategic alignment with regards to digital service innovation across the organisation was compromised due to the plurality in meaning of “business models”. Based on the reference to business models under different conditions by the interviewees and using abductive logic with (Pisano, Pironti, & Rieple, 2015) it was established that no new conclusions can be made conclusively until analysis of further data points is found to correlate. These quotes, however did provide a contextual understanding of business models and together with the conceptual understanding of service innovation (Lusch & Nambisan, 2015) a broadened understanding of business model innovation emerged.

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Build a service platform with a killer service or old service killer, but continuously evolve the platform with related services, bundling, cross sell, up sell.

> *"Our enterprise business unit (EBU) continued to work towards its vision of becoming the ICT partner of choice to corporate, SME, public sector and financial services customers. The key focus during the period was aligning the organisational structure and appointing industry leaders in key markets to support this vision. The EBU has established strategic partnerships with Amazon Web Services and Azuri Microsoft to enable the Group to effectively take products and services to the market."*

The current MTN partnership approach for digital service innovation can be understood by the partnership opportunity with Rocket Internet, described appropriately by MTN Group president and CEO, Sifiso Dabengwa:

> *"…This partnership approach enables us to participate in an already successful business with the appropriate skills. Leveraging our economies of scale enhances the business potential, making the roll-out of products and services quick and efficient."*
>
> (MTN Group, 2014)

In conclusion, the challenge or opportunity for MTN in digital services is to understand who is out there understanding the real customer problems, or if you look at Uber or Amazon, example how can something like the taxi service be made better. Given the widespread move to digital, especially retail, more and more people buying their goods online, what will happen to shopping malls in 10 years? Digital will minimise people interaction in the physical world and it will increase in the virtual world, but what will that do to social interaction and social development? Will an increased number of people need therapy? An interesting service growing rapidly is Twitch amongst the gaming community and many gamers are spending many hours daily on these platforms. Another example is Periscope, acquired by Twitter, allowing people to broadcast video globally and viewer can post text based questions and comments for the broadcaster to view.

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"Ya so the regulation restriction already means that the business models must be different."

- Williams

7 Research conclusion

7.1 Principle findings

The introductory phase of this research improved the understanding of the below research problems:

- The rapid pace of digital transformation in the global economy
- Commoditisation of core services of MNOs
- Poor innovation attempts by MNOs historically
- Convergence within the ICT industry
- Increased competition and macroeconomic challenges
- The challenges of attaining success in Africa

Once this report examined the above research problems, it presented an opportunity to set out the research objectives. The primary objective was to gather empirical evidence to improve the understanding on digital service innovation for MNOs in Africa,

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using the case of MTN, the largest MNO in Africa. Specifically, the objectives was to use an exploratory research and an abductive approach to investigate:

- The need of digital service innovation by MNOs in Africa;
- The constraints that are present that prevent the MNO from executing their growth strategy in Africa;
- The strategies that MNOs can adopt in Africa to increase service innovation and create value; and
- How these MNOs' business model innovation captures value from the trends in the digital service ecosystem.

The theory from the literature review on service-dominant logic (SDL) and the broadened understanding of service innovation (Lusch & Nambisan, 2015) provided the conceptual model upon which empirical evidence was collected for this research. In addition to SDL and service innovation theory, the literature review included:

- a historical account of developments in the mobile telecoms industry
- service innovations in this industry to date
- the next service innovation by MNOs, looking at service platforms, XaaS, IoT, Big data and business model innovation

From this literature review, what emerged was a view on digital service innovation that enabled this exploratory research, using a case study method. The empirical evidence collected had achieved the main objective of improving the understanding of digital service innovation in Africa. The evidence was based on a case study of MTN, which included 17 in depth semi-structured interviews with executives, senior managers and technical experts from across the commercial and technical teams. In addition to these interviews, data was also collected from the MTN integrated report and some internal project documents.

The findings in Chapter 5 and 6 employed thematic analysis and then an abductive approach was used to further discuss the findings in Chapter 6. The main findings of this research were:

7.1.1 The need of digital service innovation by MNOs in Africa;

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1. MTN is suitable as a case study subject for the objectives of this research, as MTN is suitably motivated and incentivised to develop strategy and execute digital service innovation, thus providing learning opportunities for this research.
2. Digital disruption and disintermediation of the MNO core business are key incentives for MTN and hence MNOs in Africa to require strategies in digital service innovation. As value is idiosyncratic, experiential, contextual, and meaning laden, the plethora of digital apps has caused value to shift from core mobile services to OTT services. This value continues to shift as trends shift along the major themes covered in Section 2.6.1.
3. The pervasiveness of digital transformation and automation in the global economy is improving customer experiences across sectors which is perpetuating customers to demand digital transformations from laggard firms, like MNO, MTN. What this means is that firms like MTN need to invest in process optimisation capability with skill-sets in digital processes, big data analytics and machine learning.

7.1.2 The constraints that are present that prevent the MNO from executing their growth strategy in Africa;

1. The constraint of MTN to execute digital growth strategies in Africa was found to be a lack of SDL amongst MTN managers. Large firms, with new strategic objectives will find it difficult to change direction towards these new objectives as a result of phenomena known as the “frozen middle” or “organisational momentum”. The firm-centric, lack of SDL product-centric approach at MTN constrains their agility towards digital service innovation.
2. MTN and MNOs in Africa need to make a definitive shift in their managerial approach from being firm-centric and product feature focused to customer experience centric.
3. MTN and MNOs in Africa (here on referred to as MNOs) should continue to push their smartphone strategy but while evolving their operations increasingly towards a digital world.
4. From the findings, using the theory of constraints, it was discovered that should the constraint be removed, then residual constraints still come in to play repetitively as one constraint is removed. In practical terms, the constraint cannot always be removed.

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5. The next constraint is argued to be MTN's organisational design, structure and development processes such that it will detract from the opportunities to capture value in digital services.
6. A shift to an alternative logic from a goods dominant logic (GDL) has started happening across the MTN organisation.
7. Value could be created and captured from process innovation, and not only technology innovation, which aligns to the literature reviewed on service innovation (Lusch & Nambisan, 2015).
8. Next possible constrain identified was the positioning of the MTN mobile money service, MTN needs to take one position and own it, from that base MTN can extend into corresponding segments where MTN sees opportunities.
9. From the literature, it was established that the service platform is a key element of the service innovation process, part of the broadened understanding and is a likely constraint to the growth in mobile money services in South Africa. This is due to platform partnerships that did not consider SDL and the broadened understanding of service innovation (Lusch & Nambisan, 2015).
10. Another possible constraint, the liberalisation concept (Keen & Williams, 2013) was also used in a non-literal way to explore the dynamic with MTN across different departments, using the abductive method. It was evident that the technology and marketing teams need to liberalise information and responsibility of digital service innovation and value creation to more areas within the organisation of MTN.
11. A major likely constraint, the relationship and processes with the mobile telecoms regulators in the major markets in which MTN operates. The structure of the relationship between MTN and the regulators in these markets are strained and constrain digital service innovation.
12. Further to the above findings, the understanding of business stakeholder theory in the context of each of the constructs part of the service ecosystem understanding is insightful towards the objective of this research (Lusch & Nambisan, 2015). The evidence supports this but also what is currently in the media with regards to $5.2 billion fine given to MTN by the Nigerian Communications Commission.

7.1.3 The strategies that MNOs can adopt in Africa to increase service innovation and create value; and

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1. The insights for RQ 1c and RQ 1d were the most difficult to surface from the analysed data. The first strategy that emerged was the approach on partnerships, i.e. to acquire a stake in that company, Rocket Internet. This allowed MTN to take advantage of their leading brand position (1st in Africa), substantial customer base (230 million) and distribution network to deliver a range of internet services including e-commerce and marketplace offerings, taxi services, travel sites and food delivery.
2. The service ecosystem presents an ecology of sorts, and represents the relationships between the different stakeholders in the ecosystem (Lusch & Nambisan, 2015). The investment in Rocket Internet by MTN is driven by the growth opportunity in internet services, including e-commerce and marketplace offerings, taxi services, travel sites and food delivery. As it is not likely for MTN to build online retails stores, Easy Taxi service, and others from within MTN, it is for this reason that a partnership and collaboration strategy is the preferred to achieve service innovation. This corresponds to a consistent view that emerged from the literature review on service-dominant logic and service innovation (Lusch & Nambisan, 2015; Bolton, et al., 2004; Skålén, Gummerus, Koskull, & Magnusson, 2015). This means that the process of service innovation is a collaboration between different actors or teams that connected in some way. This construct is central to the understanding of value co-creation or co-innovation.
3. The next strategy to look at is the growth from offering new ICT services such as cloud services and connectivity across the MTN African footprint. This is supported by understanding MTN's comparative advantage with regards to 47 data centres and enterprise grade connectivity across the African footprint.

7.1.4 How these MNOs' business model innovation captures value from the trends in the digital service ecosystem.

1. From the various discussions with interviewees, an exploratory approach was undertaken to understand the concept of business model innovation.
2. The words "business model innovation" was found to mean different things to different people at MTN. Due to this fact, the evidence suggested that strategic alignment with regards to digital service innovation across the organisation was compromised due to the plurality in meaning of business models.

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3. Based on the reference to business models under different conditions by the interviewees and using abductive logic with (Pisano, Pironti, & Rieple, 2015) it was established that no new conclusions can be made conclusively until further analysis of data points that correlate. These quotes, however did provide a contextual understanding of business models and together with the conceptual understanding of service innovation (Lusch & Nambisan, 2015) a broadened understanding of business model innovation emerged.

7.2 Implications for practitioners

This research successfully explored the conceptual understanding of SDL and the broadened understanding of service innovation by the analysis of the empirical evidence collected from MNO, MTN. The benefit for those practitioners interested in digital service innovation in mobile telecoms is argued to be greater than the benefit for academics. This is due the fact that the insights in Section 7.1 was derived using abductive logic, i.e. going back and forth between the analysed data and the literature to build confidence in the insight. These insights based on theoretical foundations, with reference to practical applications, becomes valuable for practitioners to contextualise the foundational constructs of this research. This exploratory study provides business managers within the digital ecosystem or MNO industry with a framework with which to approach the research problems introduced in Section 1.2. This study provides practitioner's with an appreciation for digital service innovation in Africa and the role that MNOs are and can play in the digital ecosystem. Employing an exploratory case study method of MNO, MTN, the research findings was argued to be representative of African MNOs base on coverage and subscriber base as argued in Chapter 4. As a result of this representation, some inferences can be made from the analysis of the empirical evidence for MNOs in Africa. Care should be taken when making inferences as there could be limitations due to the size of the MNO group compared to smaller MNOs in Africa.

7.3 Implications for academics

Since the theory from the literature review were too generic and some concepts were too dense to conceptualise, an exploratory case study of this nature together with the

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literature had provided the opportunity to define the research questions. As an exploratory study, no new explanations were expected, but for academics and researchers in the field of IT, Marketing, and Strategy execution, this research provides important context for SDL and service innovation theory, which was too abstract. From the analysis of the collected case data, and using the abductive approach, the theoretical contributions were limited the ability for future studies to formulate hypothesis on the linkages and opportunities for MNOs and digital service innovation in Africa.

7.4 Limitations of the research

In addition to the limitations discussed in Section 4.8 the following limitation was also identified:

The breath of the case study was limited to make broader conclusions on MTN and MNOs in Africa given the time constraints. It could be increased by increasing the interviews from 17 interviews to 30. This could be achieved by including additional MTN executives and senior managers from functions such as Finance, HR, Legal, Regulatory and Shared Services together with more representation across the MTN group from smaller markets. This will provide a more holistic understanding of the case subject. Together with this, desk research on the historic financial performance of MTN share price and annual results, should be correlated with MTN related public information, considering the share performance.

7.5 Suggestions for future research

To do this research using a single or multiple case study for Internet and High tech companies and compare what the differences are in the findings for the more comprehensive case study of MTN.

Also, to look at the theoretical foundations of SDL, service innovation and business model innovation and to expand on these. Expansion of these theoretical constructs should be such that it will be more accessible to the ICT sector including MNOs and Internet companies. This should be achieved by exploring digital services and

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technology trends emerging from social, mobile, cloud or XaaS, IoT, big data analytics with machine learning or artificial intelligence, and pervasive digital automation.

7.6 Conclusion

Digital disruption and disintermediation of the MNO core business are key incentives for MTN and hence MNOs in Africa to require strategies in digital service innovation. The pervasiveness of digital transformation and automation in the global economy is improving customer experiences across sectors which is perpetuating customers to demand digital transformations from laggard firms, like MNO, MTN. The constraint of MTN to execute digital growth strategies in Africa was found to be a lack of SDL amongst MTN managers. A shift to an alternative logic from a goods dominant logic (GDL) has started happening across the MTN organisation. Value could be created and captured from process innovation, and not only technology innovation, which aligns to the literature reviewed on service innovation (Lusch & Nambisan, 2015).

From the literature, it was established that the service platform is a key element of the service innovation process, part of the broadened understanding and is a likely constraint to the growth in mobile money services in South Africa. This is due to platform partnerships that did not consider SDL and the broadened understanding of service innovation (Lusch & Nambisan, 2015). A major likely constraint, the relationship and processes with the mobile telecoms regulators in the major markets in which MTN operates. The structure of the relationship between MTN and the regulators in these markets are strained and constrain digital service innovation. Further to the above findings, the understanding of business stakeholder theory in the context of each of the constructs part of the service ecosystem understanding is insightful towards the objective of this research (Lusch & Nambisan, 2015). The evidence supports this but also what is currently in the media with regards to $5.2 billion fine given to MTN by the Nigerian Communications Commission.

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(Pisano, Pironti, & Rieple, 2015) it was established that no new conclusions can be made conclusively until analysis of further data points is found to correlate. These quotes, however did provide a contextual understanding of business models and together with the conceptual understanding of service innovation (Lusch & Nambisan, 2015) a broadened understanding of business model innovation emerged.

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APPENDICES

APPENDIX A: ETHICAL CLEARANCE

Gordon Institute of Business Science
University of Pretoria

Dear Ahmad Mohamed

Protocol Number: **Temp2015-01902**

Title: **Digital service innovation: case of mobile telecoms in Africa**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker

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APPENDIX B: MTN RESEARCH APPROVAL

INTERNAL MEMORANDUM

Attention: **Larry Annetts**

Date: **21st August 2015**

From: **Ahmad Mohamed**

Digital service innovation: case of mobile telecoms in Africa

Consent to conduct MBA research at MTN
(Interviews with MTN staff and review of non-sensitive documentation)

Dear Larry,

I am conducting research as part of my MBA thesis on digital service innovation and trying to find out more about the digital service ecosystem for the case of mobile telecoms in Africa. In particular with interest to the process of co-innovation and value co-creation using APIs on mobile platforms and positioning these services as value adding to the core communication capability of MNOs. Using the lens of a two sided model of mobile networks and as service delivery platforms for B2C and B2B. This includes sharing network capabilities such as messaging, billing, enterprise applications and solutions with hosting, and also enabling the so called "Internet of Things" with service and data management at scale. The literature encompasses all of these as part of the digital service ecosystem.

As part of the data collection phase of this research, I require interviews with about 15 to 20 individuals across MTN and each interview is expected to last about an hour each. The data collected will help to understand the strategies and practices of increasing value in place at African mobile telecom companies to achieve digital service innovation.

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INTERNAL MEMORANDUM

The participation is voluntary and any individual or MTN entirely can withdraw at any time without penalty. I will be using a voice recording device for the interviews so as to allow me to review the data for my analysis, as part of this study. All of the data collected as part of all the interviews will be kept confidential and all names will remain anonymous. In addition to the interview, the interviewee may be requested if required to share any relevant non-sensitive documentation for analysis. The research report will be written as a case study on MTN to make some inferences about mobile telecoms in Africa.

In the event that any individual or MTN may need to clarify anything regarding the interviews or any aspect of the research feel free to contact my supervisor or myself. Our details are provided below.

Researcher name: Ahmad Mohamed
Email address: 1ahmadmo@gmail.com
Phone number: +27 83 209 1740

Research Supervisor Name: Dr. Mira Slavova
Email: mira@mmd4d.org
Phone: +27 78 444 0124

Signature of researcher: _____ Date: 21-08-2015

Kind Regards,
Ahmad Mohamed

Ahmad Mohamed

Larry Annetts
Chief Marketing and Sales Executive
MTN SA

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APPENDIX C: INTERVIEW CONSENT FORM

Digital service innovation: case of African telecoms

Interview Consent Form

I am conducting research on digital service innovation, and I'm trying to find out more about the digital service ecosystem for the case of African telecoms, particularly innovation with process of co-innovation using mobile platforms and value added services.

Our interview is expected to last about an hour, and will help me understand the strategies and practices at African telecom companies to achieve digital service innovation of increasing value.

Your participation is voluntary and you can withdraw at any time without penalty. I will be using a Dictaphone to record the interview so as to allow me to review it for my analysis, as part of this study. All of the data collected as part of our interview will be kept confidential and your name will remain anonymous.

In the event that you may need to clarify anything regarding the interview feel free to contact my supervisor or myself. Our details are provided below.

Researcher name: Ahmad Mohamed

Email address: 1ahmadmo@gmail.com

Phone number: +27 83 209 1740

Research Supervisor Name: Dr. Mira Slavova

Email: mira@mmd4d.org

Phone: +27 78 444 0124

Signature of participant: _____ Date: _____

Signature of researcher: _____ Date: _____

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APPENDIX D: TURNITIN ORIGINALITY REPORT

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